Railway Age Gazette

Including the Railroad Gazette and The Railway Age

PUBLISHED EVERY FRIDAY, AND DAILY EIGHT TIMES IN JUNE, BY
THE RAILROAD GAZETTE (INC.), 83 FULTON ST., NEW YORK.

CHICAGO: Plymouth Bldg. CLEVELAND: Williamson Bldg.
LONDON: Queen Anne's Chambers, Westminster.

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Subscriptions, including regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free:

United States and Mexico .....$5.00 a year.
Canada .....$6.00 a year.
Foreign Edition (London).....£1 12s. ($8.00) a year.
Single Copies .....15 cents each.

Shop Edition and the eight M. M. and M. C. B. Convention Daily issues, United States and Mexico, $1.50; Canada, $2.00; Foreign, $3.00.

Entered at the Post Office at New York, N. Y., as mail matter of the second class.

VOLUME 49. FRIDAY, JULY 29, 1910. NUMBER 5.

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A COMMITTEE representing New York banking interests is now planning to hold a conference with European bankers to discuss the arrangements which have been made between bankers, cotton shippers and railway representatives in regard to foreign order bills of lading covering cotton shipments. The general situation in regard to these bills of lading was described in the *Railway Age Gazette* of July 15. Since then the traffic representatives of the railways met at White Sulphur Springs, and an agreement probably covering the shipment of this season's cotton crop was reached. The railways agreed to establish offices for the certification of the signatures of their agents on foreign order cotton bills of lading. The question of liability for shipments of cotton on which railway agents had issued bills of lading and which had not been received by the railways was not discussed and no action was taken. The concessions that were made by the railways only in part meet the requirements of the bankers and of the situation in general. The certification of agents' signatures would probably prevent, or at least tend to prevent, such practices as were used in the Knight-Yancey case; but, after all, the present arrangement is only a partial concession on a question on which some of the railway men interested acknowledge that it would be to everyone's interest in the long run to be generous. The certification to the genuineness of the agent's signature would seem to mean nothing more than the notary public's stamp on a deed, and a man who was buying land would hardly feel that he was getting a guaranteed clear title if he simply knew that the one to sign the deed was, in fact, John Smith. The courts, of course, may not interpret this validation certificate in this way and may conceivably hold that it fixes some further liability in the railway. The bankers, it is understood, may now have to make some arrangements with surety companies for the guarantee of the value of goods behind the bills of lading, and this could, it seems, have been avoided by a more open-handed concession on the part of the railways.

THE success of the city of Philadelphia in marketing a "popular" loan suggests the application of the same principle to loans of our high class railway companies and adapting to this country the usage of France where the "popular" loan in small denominations is familiar if not normal. The present juncture in the railway bond market, when the gilt-edged railway underlying security is depressed and the market restricted, give special emphasis to an idea both for and against which there are good reasons. On the negative side are the mechanical details of the small popular bond, its unfamiliarity to the common people as a form of investment, probably some opposition by old underwriting interests, greater opposition by the savings banks which would fear some reduction of their deposits and, more remote but more serious, the danger that the "gilt-edged" popular bond would ultimately prove the forerunner of railway bonds of a more inferior type, tempting investment of the poor earner by a high rate of interest. On the positive side are the economies in underwriting, the higher return to the poor investor, the elimination of the "periodical" feature of the savings bank interest accrued—for the price "and interest" in the case of the bond would bring the interest down to date—and finally the benefit to the railways if the clerk, the mechanic, and even the day laborer became small railway investors and their mental attitude toward the railway as an institution changed. There is, of course, a sense in which the poorer classes, in a great host, are, as savings bank depositors, railway investors now. Their deposits are to a great degree secured by the immense holdings of senior railway holdings by the savings banks; but it is a secondary relation and different in moral and sentimental results from the direct investment which shifts the small investor into a genuine bondholder, though far from being a "bloated" one. On the positive side is also that generally benign theory of the wide distribution of railway security holdings in non-speculative hands—though the theory has its limits and is restricted rigidly to a class of railway securities which do not default and wreak woe on a large body of unorganized holders like that following the calamity of a savings bank failure. Taking the negative and affirmative arguments side by side, the latter are at least so far dominant as to raise the question as to whether in times to come the "popular" loan may not be an expedient of our biggest and strongest railway corporations, with their steady dividend earnings as a solid equity to secure their borrowings.

IN the report of the American Society for Testing Materials on the protective qualities of various pigments as applied to steel plates, some tests were cited where such plates were freed from scale and submerged in water containing the pigments to be tested. According to these tests, certain pigments seemed to prevent corrosion and others to stimulate it. That is, where certain pigments were used corrosion did not occur, while it did occur with others. Hence the former were classed as inhibitors and the latter as stimulators. Among these, zinc oxide is put as an inhibitor and graphite as a stimulator. This classification has been criticised on the ground that it does not agree

with the results of tests of paint put on the plates of a test fence, in which the zinc oxide paint has failed at the end of a year, while the graphite paint is still in good condition. In fact it did sound a little strange to have graphite set forth as a stimulator of rust, when its record as a preventive and protective coating is so good. Data has been published from time to time in the *Railway Age Gazette* showing complete immunity from corrosion, under very trying conditions, of steel protected with graphite paints, and unless the work of the committee in making these tests was very carefully done, the submerged tests might easily give results that are quite contrary to the facts. For instance, one investigator asserts that he can produce a greater difference in the apparent corrosion of two plates than that found between zinc oxide and graphite, in the test referred to, by a change in the method of supporting the two plates in their bath. When these things are taken into consideration, then, it is not at all strange that exception is taken to the finding of the committee by certain makers of graphite paints who feel that unwarranted conclusions have been drawn, and that service in the field should be the proof to which this particular pudding should be subjected. Again, if these conclusions are checked with the results obtained from current exposure tests extending over a period of two years, it will be found that there is but little difference between the zinc oxides and graphite, both coming in behind the red leads, being about the same as the iron oxides, and leading the other pigments by a wide margin. So a test of the corrosive or non-corrosive qualities of a pigment by watching the effects produced on a steel plate submerged in water with which a pigment has been mixed and attributing those effects to the influence of the pigment does not seem to be a good one. It must not be inferred that the American Society for Testing Materials will base its final findings on such submergence tests, but it seems curious that these should have been given the importance that they have.

THE CANADIAN RAILWAY SITUATION.

CANADA, just at present, is a rich field for the student of railway events. The situation there has no real analogy in railway history. There was a situation somewhat like it in the United States when, several decades ago, the first lines to the Pacific were pushed through, when Congress was free with subsidies and land grants, when the scandals of the Credit Mobilier smirched more than one reputation, and when, later, new lines were put through in rivalry with the pioneer Union and Central Pacific. But on this side of the border the competition for the Pacific and far West business has extended through many degrees of latitude and long periods of time. In Canada the centralities of territory, relatively speaking, and quicker time conditions have made the conflict more acute and dramatic. The battlefield has been smaller—though absolutely, in its transcontinental dimensions, large—but the contest, prospectively at least, more intense.

The railway map of Canada shows two great systems which divide the land. The older, but now the smaller, the Grand Trunk, with its big child, the Grand Trunk Pacific, counts probably in its present trackage not less than 7,000 miles, probably more. It is well intrenched in Ontario, the old Canadian West, at the commercial centers of the country and in that region which lies between the Niagara frontier and Chicago. Its record has been a checkered one and, financially, not cheering for its stockholders. First on the ground, by securing government aid and with prevision of the great development of the wheat lands of the Canadian Northwest, it might have become the railway monopoly of the Dominion and taken the harvest which a younger and more energetic rival has reaped. That it failed to do so must be one of the marvels, unless, perhaps, account is taken of the old temperamental slowness of our kin above the St. Lawrence. We say old, for no one will accuse them of sluggishness now. But the Grand Trunk's awakening came at last, and now, backed by land grant and subsidy, it is making for the Pacific coast and invading the prairie territory of the Canadian Pacific.

Very different has been that rival's history. Pushed ahead swiftly by the energy and enterprise of men of go and prescience, its record has been one of singular, almost amazing success. It has been favored, undoubtedly, by the unlooked for development of the Canadian Northwest, and the rich results of the lavish yet, at the time, not unwise subsidies of the government in money and land were probably not fully foreseen. But all things come to the railway promoters who intelligently dare. As a sequel, the Canadian Pacific reveals itself as a mighty transcontinental system, like its competitor tapping Canada at important centers, with some 14,000 miles of track owned and controlled, and steadily acquiring more, with a great *nexus* of lines in the northwestern wheat region, with a back entrance to Chicago recently secured, seeking and acquiring closer traffic relations with President Mellen's system in New England, a high dividend payer already and with credit as high as its dividends—yet, withal, looking with anxious eye on the fresh vigor of its rival, backed by the same governmental co-operation on which its own prosperity was built up. And it dreads also the results of the physical invasion of the traffic kingdoms where its rulership, heretofore complete, may hereafter be divided.

That into such conditions of warm railway rivalry, already existing and sure to grow hotter in the future, Canadian politics enters goes without saying. We reviewed some two months ago a debate in the Canadian House of Commons, in which the opposition attacked sharply the financing and the construction accounts of the Grand Trunk Pacific, as well as the Grand Trunk's extension to Providence, R. I., and incursion on the New Haven's domain. There was palpable ground for the opposition assault, and its nature and fierceness forecast the railway question as the coming issue of Canadian parties, possibly resulting in the overthrow of the government. But whether the Canadian government shifts or not, it has obviously been tied up too closely with the Grand Trunk extension to recede. It may modify some of the plans, particularly in regard to the Grand Trunk Pacific line of 1,400 miles through the barrens between Quebec and Winnipeg. It may compel the abandonment of the Providence extension, as diverting traffic from Canadian ports. But whether Liberal or Conservative, the government seems bound to see through, at whatever cost, the extension to the Pacific coast and a new line to the northwestern wheat region. The precedent of the state aid given to the Canadian Pacific stands as an obstacle to retreat, whether the fiscal results are the same or otherwise.

The Canadian situation, quite apart from any political contingencies, raises some interesting questions for the future to answer. How far will the Canadian government venture into subsidies for a secondary transcontinental line be justified after promoting successfully a primary line entering the same general territory? Will future rivalries of the two great Canadian railway systems reach the usual ultimate of consolidation? And, whether competitive or merged, what are to be their future traffic relations with our own territory south of the border line reaching across the continent and, as affecting transportation routes, broken only by the great lakes, the Rockies and the Cascade range? These are interrogations of moment, to which the successors of President Hill in the West and Presidents Brown and Mellen in the East—or, maybe, the Federal Government as railway proprietor—will have to reply.

NEW BOOKS.

The Railway Special Agent and Police. Published quarterly. W. C. Pannell, Editor and Manager, Baltimore, Md. Thirty-five cents a copy; $1.00 a year.

As was announced at the annual meeting of the International Association of Railway Special Agents and Police, at Los Angeles, last May, the proceedings of this association now take the form of a quarterly periodical, and the first number of this has just appeared. It is a good looking pamphlet of 64 pages, including two pages, with a full-page picture, devoted to the Ladies' Auxiliary. Among the subjects discussed at this year's meeting were Registration of Trade Marks; Disposition of Journal Bearings, and Criminal Law.

Letters to the Editor.

COURTESY ON TRAINS.

The Cuba Railway Co., Camagüey, Cuba, July 11, 1910.

TO THE EDITOR OF THE RAILWAY AGE-GAZETTE:

I have noted with interest and much well-wishing the articles on politeness which have appeared in your columns, particularly that one in your issue of the 1st inst. Whatever it may be best to do, certain it is that *something* ought to be done.

On the evening of the 29th ult., on one of the railways serving the city of Tampa, the writer, who had that day arrived from Cuba, boarded a northbound train for a short local ride, being accompanied by two ladies who had ridden south to Tampa to meet him. He had failed to purchase tickets, for the very good reason that he did not know whether the ladies possessed ticket transportation returning, and for his own reasons did not wish to raise that question previous to boarding the train.

So the party boarded the train and found that it would add to the convenience and comfort of the journey to have a seat turned. (Turning seats is a much-mooted question, but conductors are expected to exercise a reasonable discretion.)

In due course the conductor presented himself. He was tendered an amount understood to be sufficient to pay the cash fares of two persons with the usual excess, and was handed also a ticket for the third member of the party. At the same time he was asked, since it was noted that there weren't more than twenty passengers in the coach, to turn a seat. (Presumably the request was made politely, the writer being a mere passenger traveling with ladies.) The fares were accepted without exception and the request was churlishly refused, and the conductor passed on.

Then, on the principle that so strict obedience of the one rule called for equally faithful adherence to the other rule, the writer decided to demand the issue of the usual cash fare receipts (having failed to receive them on this occasion and on two others previously when traveling over that road in that locality). Accordingly, after perhaps a quarter of an hour, the conductor, on passing through, was hailed. He halted, after passing our seats, and returned, and then this demand was made, to which the genial puncher replied, "Sure! give you two if you want 'em," and to which the passenger answered, "Thank you very much, as *you* prefer." The worthy servant disappeared and in a few minutes returned with two slips which he presented with various admonitions, punctuated by sundry jabs of his fingers on the passenger's shoulder, about not getting on his train again without tickets, and with the further information that he had issued the receipts at reduced rates, since he was not collecting the excess, as he had the right to do. The passenger then hastened to thank the conductor again, and assured him that he did not want anything less than the rules prescribed, whereupon those slips were taken up, 20 cents additional fare was demanded and paid, and other slips issued. These slips are still in my possession, and if this letter is published and an officer of the road in question sees it and wishes the facts direct, he can get them.

This transaction speaks for itself, and I never should have complained of the matter to the traffic department of the road interested, simply because of the fact that complaints, like the poor, the railways have always with them; but on reading your last article it occurred to me that this was such a representative case of flagrant incivility and attempted dishonesty, that it might be useful to air it.

The writer has been a railroader for many years and appreciates the annoyances to which conductors constantly are subjected. He was himself, for a time, a train ticket taker on the Panama Railroad. So much for any lurking suspicion that the passenger was not polite to the conductor. There was no element of grouch in connection with having to pay fare, as he undoubtedly could have secured passes over the rail line in Florida, as he did over the steamer line between Havana and Tampa, had the same been requested.

G. G. DEDGE.

THE VALUE OF AMERICAN RAILWAY STATISTICS.*

BY A. J. COUNTY,

Assistant to Second Vice-President Pennsylvania Railroad.

It is essential that the statistics of costs of operation of railways to be put in possession of a divisional operating officer should first be those over which he has control, that they may apply proper remedies for unsatisfactory performances brought to light by equitable comparisons, but such officers should not be allowed to forget that other charges, such as taxes and interest, exist, which are not chargeable to expenses, and that dividends should be earned and paid. Statements of the unit costs of handling tonnage, passengers and baggage at the larger stations are also prepared and sent for criticism to the various officers, and to ascertain why costs are higher or lower at one station than another. On some railways the chief features of expenditures are also exhibited by chart and diagrams so that vivid pictures as well as figures may drive home the facts. There are now on several of the operating staffs, officers who are charged with the duty of supervising operating costs of all kinds including shop results, and to ascertain by personal examination and conference why better results cannot be obtained, and create a wholesome spirit of emulation among the various officers and divisions to bring about these results. I do not wish to convey the impression that all the railways in the country compile and use all of the foregoing facts, or that the American railway officer spends the most of his time sitting at a desk, wearing a pair of spectacles, digesting railway statistics, or has any greater love for them than officers in other countries, but in so far as they are of assistance to him he must, and does, study railway statistics. Constant and personal familiarity with his operating, division, or departmental work, with the assistance of a trained staff, enables him to discern promptly any danger signal of loss of business or excessive cost. As the result of an evolution in a chain of progress of which he is a part, he must and does, profit by statistics, and improves the situation by direct and immediate action taken on the ground as the result of his consideration, or if he cannot do so, is in a position to report to his superior officer reasons for such inability, and receives the results of the more extended experience of the latter, who will also probably warn other officers.

CONCLUSIONS.

I need not advocate the necessity or advantages of a uniform system of accounts or statistics, for that is behind the railways of North America which are devoting their energies to settling the few remaining points in connection with the prescribed accounts in such a way as to make the system finally effective and adapted to the varying interests of the weak as well as the strong roads, and to those companies which must observe special charter requirements of the states or provinces in which they are incorporated. That such advancement has been made is not due to any inherent virtue in American railway management, but rather to the necessities of development and management already alluded to, which were stronger than any inherent inclinations.

The experience of American railways removes all doubt as to the results achieved by vital statistics, in the hands of those directing and operating the various lines. Rates have fallen, operating expenses, taxes and other charges increased, but the growth of traffic has been handled with greater economy because the operating and traffic officers had full statistics for their constant reference and warning, and these statistics were available for use in various forms very soon after the traffic was moved or the expense incurred. The remedies have been applied in the shape of larger cars, larger train loads, and cars constructed of more durable materials, larger and more scientifically designed freight classification yards and facilities, and the use of a large part of the surplus income for improvements

*Abstracted from parts of a comprehensive report of the International Railway Congress, 1910, on the principles of statistics of railways in operation and uniform classification of working expenses.

of the grades, alinements and facilities, thereby restricting capital charges and making dividends a permanent feature by deferring them until the condition of the railway and its equipment justified their payment.

In stating these facts, I do not lay claim to any superiority for American methods, nor am I oblivious to the progress in accounting and statistics made by the railways of other countries, from which we may learn a great deal.

The railways in North America have by consolidation and affiliations developed into large systems, each embracing from a few thousand to several thousand miles of main running tracks, so that it is impossible to manage them efficiently without the assistance of vital and comprehensive accounts and statistics of the service performed, the volume and character of the business done, the revenues, costs, and net revenues therefrom, and comparisons with other periods compiled in such a way as to aid the efficient direction and management of the property, by quickening responsibility from the highest to the lowest, and from the lowest to the highest officer. In America there is less time and no more money to be wasted on statistics, unless useful, than in any other part of the world.

(*a*) I take the broad ground, and from the list herein stated it will be conclusive that no special statistic is believed to tell the whole story without others to supplement and correct it. All statistics kept should demonstrate their utility, and if not demonstrated should be abandoned. Scarcely any two officers derive a like value from a similar statistical statement because of their personal characteristics and service in which they received their training, or because the traffic or problems of their respective divisions differ radically; (*b*) No matter what statistics are prepared, it will always require (1) personal knowledge of the road, its traffic, working conditions and standards to properly interpret them, so that they will act as a guide to, and quicken that responsibility which results in efficient operating results, and (2) men of ability, experience and loyalty to produce such results. These results cannot nowadays be achieved until the sense of responsibility and some sort of comparative costs and results are given to foremen, section men, station masters, yard masters, agents and train masters, as well as officers, so as to give them facts covering the cost of labor and supplies involved in their own work, and gradually interest them toward greater efficiency by eliminating waste of materials, time and effort. This field is still a large and fruitful one, and the costs involved are too large to take chances on results; (*c*) Unless statistics reach operating, traffic and administrative officers within a relatively short time after the operations have taken place their value is largely lost and they then serve purposes of record only. This can only be done without duplicating working forces by the close working of the operating and auditing officers; (*d*) Each operating and traffic officer should have one or two recognized daily statistics summarized by weeks and for the month, agreed upon with the auditing officers, depending upon the character of the division (i. e., whether it is one fed by traffic from other divisions, or is a division located in strictly competitive territory where traffic originates, or has other special features) to keep him in touch with actual operating conditions upon his division affecting operating efficiency and costs. The poorer the railway, the greater the necessity for knowledge of this character, and the greater the necessity for co-operation between operating traffic and accounting officers. When weekly or monthly statistics for a division are furnished, a separation should be made between the statistics subject to the control of the operating officer from those over which he has no control, or only partial control, and a clear comparison of both sets of statistics given with a similar month and period in the previous year. Divisional operating officers through the medium of monthly divisional income and expense accounts should be given the facts regarding the proportion of the fixed and other obligatory charges of the company which the earnings of their division are expected to meet, over and above the operating and maintenance charges. The latter quickens a responsibility for earning a good margin over operating expenses, and broadens the view of the officer; (*e*) a definite classification must be uniformly observed so that the statistics will at all times convey the same meaning and insure proper comparison with the same items for similar previous periods of the same road or division with itself, but not necessarily, however, with those of any other railway; (*f*) that railway revenues and expenses be absolutely separated from all other operations which the company conducts or in which it is interested; (*g*) that in no system of uniform accounting should the desire for special information by railway or government officials lead them to make arbitrary decisions which strip the operating expenses of everything except bare maintenance charges, and force all above that into the capital accounts. In the interest of the public and the railways the capital accounts should be limited as much as possible, and every encouragement given to make adequate charges to expenses, since all transportation officers naturally try to keep their expenses down rather than up, and so prove their superior operating methods. Charges in excess of ordinary maintenance can be so shown in the accounts that uniformity will not be outraged. In the desire to standardize accounts the efforts should be confined to principles and not to details of management, for it must be remembered that each railway is a problem, and any attempt to mold all railways to one pattern will eventually be found ill-advised on the part of the regulator, hurtful to the regulated, and an incubus on individual and corporate efficiency; (*h*) while the American accounting and statistical system is not absolutely perfect, I do not know that it is excelled anywhere. It has proven its benefit to the railways, and enables investments in railway securities to be made on a clear knowledge of the physical and financial condition of the companies.

The railways and their transportation services are deemed to be of a public nature because the state confers upon them the power to condemn and appropriate land for their purposes subject to the payment of the proper value therefor, and because of the dependence of the community upon the transportation service. So far as the right of eminent domain is concerned, the railways avail themselves of it only as a last resort, after exhausting private negotiations, because of the excessive prices awarded by court juries or commissioners compared with the actual value of the land, but although the railways are privately owned, they are nevertheless granted this right because the use of the land is for the public benefit. The real reasons why the railways are a public benefit are because (1) they enrich the land owner from whom the right of way must be purchased; (2) they create wealth for the state, municipalities and country through which the lines are constructed by furnishing the means for the development of natural resources, manufactures and other commodities, quickly and cheaply bring them to the proper market; (3) they increase the revenues of the community by liberal payments of taxes; (4) they constantly enlarge and improve their facilities; (5) they precede instead of follow the settler, thereby stimulating population and greatly extending and serving the wants of the community as well as adding to the ability by which such wants or luxuries are supplied and satisfied; (6) they furnish a reliable avenue for investments of home and foreign moneys, and steady employment for large bodies of all grades of laborers, artisans, clerks and professional men; and (7) they open a large and constant market for all kinds of materials and supplies consumed over an extensive area.

Their permanence insures prosperity to the community and while other industries may come and go with only a temporary or partial effect, all suffer when the transportation service ceases or becomes insufficient.

It would be idle to deny that we are living in a new era of progress in which the standards of living and practice have been materially improved and railways and other transportation agencies have played no small part in disseminating these higher standards of living and intelligence throughout the world. They

minister to the supply and demand of the whole world, break down the barriers of racial prejudice and provincialism, especially the railways in a country of extensive natural resources and population like North America, and nothing can permanently affect the existence of the railways, the service they render, or the charges for such service, that is not communicated to those countries who look to it as the sources for agricultural, mineral, forestry and manufacturing products and to their citizens who have invested their capital therein.

These factors have created a demand in all countries for the standardization of railways as well as inquiries regarding their operating and financial results, and for the use of standard units by which these results may be conveyed in unmistakable form and substance. Uniformity of accounting and statistics will never admit of an actual and final comparison of one railway with another without a full knowledge of all the facts and conditions, nor will average statistics ever form a reliable rate-making basis, although in the days of keen competition these figures were a guide to that end and when uniformly kept for a series of years are a great advantage. It would nevertheless be a distinct gain to the railway profession, to those whose moneys are invested therein, and to the governments from which railway powers are derived, if this responsibility were so appreciated that a uniform system of railway reports, and particularly a uniform system of operating statistics, so far as the same can be made uniform, were to be adopted by the International Railway Congress.

POOLING LOCOMOTIVES.

At the joint meeting of the American Society of Mechanical Engineers and the Institution of Mechanical Engineers, at Birmingham, Eng., and London, July 25 to 30, William Forsyth, associate editor, *Railway Age Gazette*, presented a paper on American Locomotive Terminals, in which he described the engine house practice on the Pennsylvania Railroad at East Altoona, Pa., and discussed the pooling of locomotives. H. H. Vaughan, assistant to the vice-president of the Canadian Pacific, presented a paper on Handling Locomotives, which dealt entirely with pooling. Mr. Forsyth's remarks on pooling and Mr. Vaughan's paper follow.

MR. FORSYTH'S REMARKS ON POOLING.

"Improved engine house facilities, more system and better organization are favorable to the pooling of locomotives, and this practice has become more general for freight engines in the United States. As recently as 1905 the reports on pooling presented at the International Railway Congress indicated that it was not used on the majority of railways in the United States under normal conditions of traffic. The large increase in traffic in proportion to the number of locomotives in 1906 and subsequent years has compelled most of the roads to resort to the pooling of freight engines and the double-crewing of passenger engines, and these methods are now well established on the majority of American railways. By improved methods, the operations of cooling down, washing and filling with hot water may be performed in less than two hours without injury to firebox and tubes, and this alone has contributed in a large measure to the success of pooling. The reduction in boiler pressure from 225 lbs. to 160 and 180 lbs. has also reduced the number of boiler failures and permitted the more continuous use of locomotives which results from the pooling system.

"The amount of work which the engineers and firemen do at the engine houses is now so small that it is almost confined to lubrication of machinery and inspection of tools and supplies on engines, and no dependence is placed on them for repair work. The engineer is required to report any defects or needed repairs which he observes while running the locomotive or by casual inspection on the outside. The machinery underneath is inspected by men regularly employed for that purpose, and inspection pits in the tracks approaching the engine house are now regarded as an essential of a modern locomotive terminal. With the changes in practice above indicated, the pooling of freight engines is rendered more successful and satisfactory and its effect on the cost of locomotive repairs is not so pronounced as formerly.

"On some railways where shop facilities are limited, locomotives are required to make a large mileage before they go in for general repairs. The principal items which send engines frequently to the shop are worn tires, defective tubes, and, perhaps, worn driving boxes. At some engine houses all these repairs are made, the worn tires being replaced by new ones, or by others which have been turned at the shop. In this way such machinery as rods, crossheads, guides and link motion is kept in service, so that passenger locomotives make as high as 127,000 miles, and freight locomotives, 100,000 miles between general repairs; one passenger locomotive has made as high as 256,000 miles between shoppings. Passenger locomotives average 120,000 miles and freight locomotives 95,000 miles.

"On the Chicago, Burlington & Quincy for the last six months of 1909, pooled freight engines made on one division as high as 4,167 miles per month, and 110 engines on three divisions averaged 3,777 miles per month. On other roads passenger engines double-crewed make an average of 6,500 to 7,500 miles per month, one road reporting for engines in express service 418 miles per day and 12,780 miles per month."

MR. VAUGHAN'S PAPER.

The desirability of pooling engines in place of operating them by regularly assigned crews depends, in the writer's opinion, on whether the engines are engaged in passenger or freight service, and in the latter case, on the conditions which exist.

Passenger Service.

Where traffic conditions admit of the engine making greater mileage than can properly be run by one crew, two crews assigned to one engine, or three crews to two engines, will enable the engine to make as great a mileage as is desirable. On account of the comparatively short time occupied from terminal to terminal, the crews can usually make a round trip without holding the engine longer than is required to handle it and prepare it for the return trip, or to await its train. By using more than one crew to the engine, it is theoretically available for its return just as soon as though it were pooled. In practice, unless pooling is carried to the extent of sending out any engine on any train, certain engines are regularly used on certain trains or groups of trains, and it is comparatively easy to arrange the crews and engines so that a reasonable time may be allowed for repairs and yet ample service be obtained from the engine. When working with assigned crews it is of course usual to employ some extra passenger men to take the place of the regular men, who are also available in case an extra trip is required from an engine on account of specials or extra sections of regular trains. Where regular scheduled trains have to be provided for, this system is as flexible and convenient as pooling and has the additional advantage in passenger service that the men run certain trains regularly, and will consequently give better service than when handling a number of trains indiscriminately.

Pooling in passenger service is not in extensive use and will presumably have few advocates. The writer would, however, state as a result of his experience with both pooled and assigned engines in passenger service, that he is most strongly opposed to pooling in this service and considers that far better results can be obtained from assigned crews.

Freight Service.

Here conditions are very different. The time is slow and a long time is occupied from terminal to terminal, so that crews may require a full allowance of rest on arrival, or may even have to be relieved on the road. Few, if any, of the trains run at regular hours, and in place of following a defined schedule, the demand for engines varies with the traffic. When business is heavy, engines are wanted as soon as they are repaired and ready for service, making it difficult, if not impossible, to select the engines in any particular order. By pooling, such difficulties may be more easily met, especially

at large terminals. When engines are assigned the practice usually required by the agreement with the men is that engines shall be prepared and despatched in the order in which they arrive, but if the engine is ready its use may be retarded by the time required by the crew for rest. In pooling, both these objectionable conditions vanish. An engine may be turned at once if fit for service and thus rendered immediately available, and the movement of the men being entirely independent of that of the engines, the detention of engines at a terminal can be regulated by simply increasing or decreasing the number in the pool.

Under such conditions, if pooling is not carried on in name, it will be in fact, simply because business can not be handled unless engines are used without reference to the order of their arrival. Granted, therefore, that pooling is advantageous under these conditions, it should be done properly. All the features necessary to a successful pooling system must be employed, such as thorough terminal inspection independent of the engine crews, and arrangements for handling tools and engine supplies, and caring for headlights, oil cups, etc. If pooling is resorted to when business is especially heavy, or when traffic is disturbed by storms or by other causes, without proper arrangements being made, the results are most objectionable. Under these circumstances, the condition of the power will depreciate rapidly and the service rendered will be exceedingly inefficient. The maxim is frequently stated, "If you pool, pool," and its wisdom has been demonstrated by experience. The real question about pooling is, therefore, whether there are conditions under which it is preferable to adopt the alternative practice, that of running engines with assigned crews. This depends on the results obtained from the two systems, which are in the writer's experience as follows:

Mileage.—It is possible to obtain somewhat greater average mileage per engine under the pooling system, but the increase does not exceed 10 per cent. when traffic is being handled smoothly and without excessive congestion and delays.

Repairs.—When running successfully under the assigned engine system, repairs are less than when similar conditions exist with pooled engines. A man running an engine regularly keeps up the smaller details and knows what work is required at once, and what must be looked after in due time. His inspection reports are more reliable than those of a man who has had an engine for one trip only. As he has to run the engine next trip as well, he will handle it with greater care and avoid any action that will cause him trouble in the future. Men who have been accustomed to running pooled engines will not do all this at once, but they most certainly will if assigned to an engine for any length of time, and the difference is noticeable in engine houses where some engines are assigned and some are pooled.

Engines are sometimes taken care of by the headquarter station system, the work required to maintain the engine in proper condition being done at the terminal designated as the home station, while at the other terminal the only work done is that necessary for the return trip. With this arrangement, even with pooled engines, the same crew will, if possible, make the round trip; but when they are changed, practically as much work is required at the away station as at the home station. The result is a considerable increase in the cost of repairs, for there is not as a rule very much difference in the cost at the home station.

When the assigned engine system proves inadequate for traffic demands, the results change. Men will endeavor to book enough work against the engine to hold it until they have rested, and, on the other hand, engines are liable to be wanted before repairs that are actually required are completed. Under these conditions engines may be better and more cheaply maintained when pooled; but under normal conditions the writer's experience would show that with assigned crews the cost of running repairs may be reduced 5 to 10 per cent. and better mileage obtained from the engines between shoppings.

Fuel.—It is almost impossible to determine the fuel consumed by an engine on an individual trip, and consequently difficult when pooling to keep any record of the amount of coal used by different men. A record may be kept by engines, but it is then impossible to locate the responsibility for any excessive consumption. The practical result is that on pooled engines, individual fuel records are of comparatively little use. With assigned engines, while trip records may not be individually accurate, the average of several consecutive trips soon becomes so, as the variation of the amount of coal left on the tender, while important on one, is of comparatively small importance on a number of trips. There is no doubt in the writer's mind that individual coal records, whether by trip or by period, are an important factor in obtaining economical results in fuel consumption, both from men and from engines, and he ascribes the good results that have been obtained on the Canadian Pacific largely to the careful way in which the records have been watched.

Apart from the records, the familiarity of the men with the engines has an important bearing on fuel consumption. Most engines vary slightly in the way they burn the coal, in the nature and intensity of the draft, and in the best position for the throttle and reversing lever. Crews knowing an engine thoroughly learn about these peculiarities, while they do not when running a different engine each trip. One crew will obtain from an engine results that are impossible for another crew, and thus the result with assigned crews is a tendency to higher efficiency than when every engine has to be drafted and adapted to do the work with the poorest crew on the division. It is only necessary to watch the difference in the way an engine is handled by a regular crew and by a pooled crew to realize the advantage of the former, and important results have been clearly shown with the same men and engines, on divisions where the two systems have been in effect.

Service.—The remarks that have been made in connection with repairs and fuel apply with almost equal force to the class of service obtained from the engines, with reference to failures, breakdowns and ability to make the time required. A crew that knows the engine will get more out of it than one that does not. They will notice any difference in its working and will take more interest in getting any defect rectified. They will keep their equipment in better condition and will pay more attention to bearings which show signs of heating, etc. All these conditions lead to better and more efficient service.

Engine House Expenses.—Inspection, the care of tools, the filling of lubricators, headlights and cab lamps, are commonly looked after on assigned engines by the crews. When engines are pooled this work has to be done by the engine house force. At a large terminal this expense is not large, but when the number of engines handled is small it is difficult to arrange the duties of the men doing this work to prevent its becoming a serious item. Conditions vary on different roads in this respect, but the fact remains that this work is not in any way burdensome to men having a regular engine, while it is burdensome if they are required to prepare a different engine each trip, and consequently they object to it very strongly. In the majority of cases this work constitutes an additional charge on engines that are pooled.

Conclusions.

In passenger service pooling is objectionable under any conditions and should be avoided if possible.

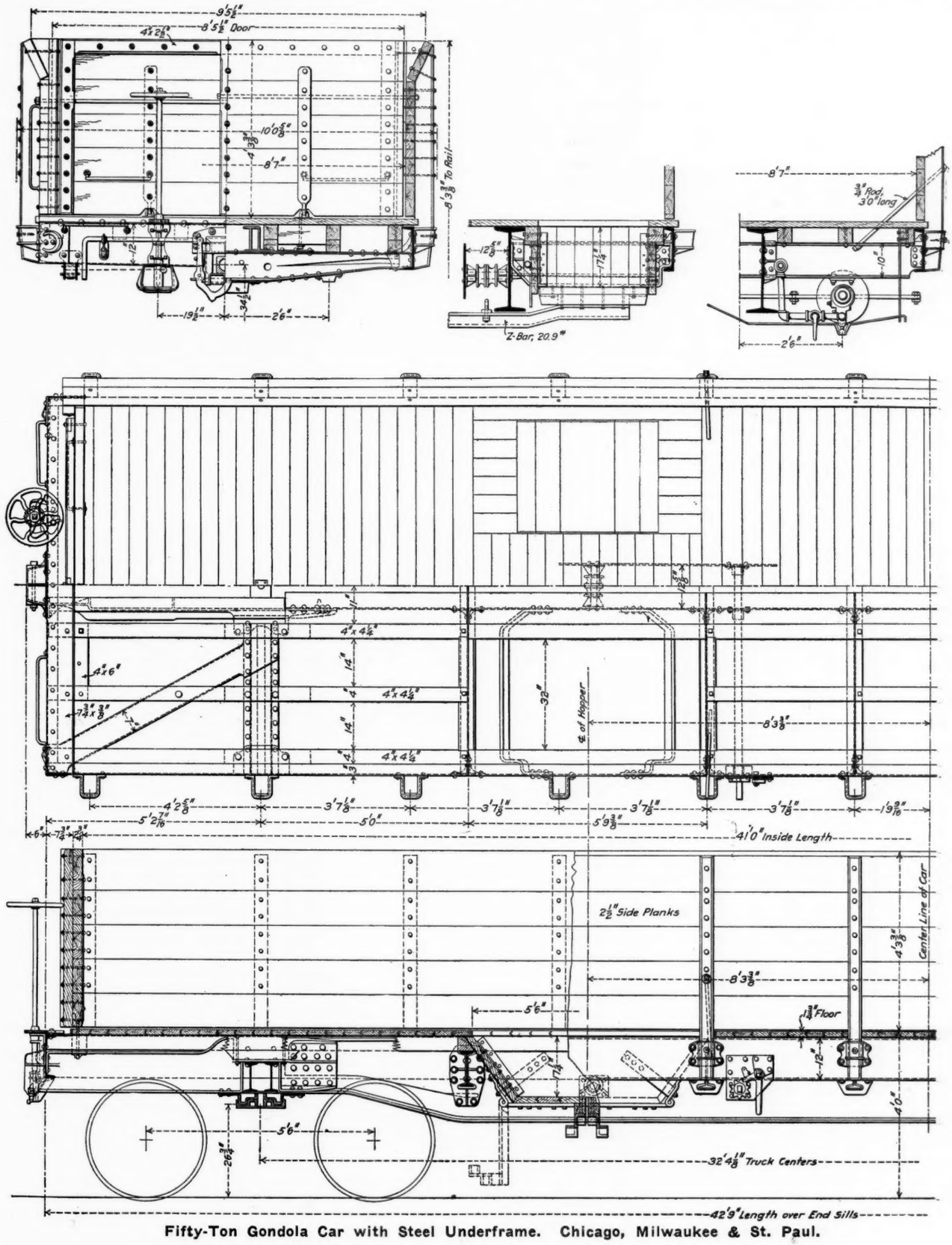
In freight service pooling is advisable if conditions are such that engines cannot be run with assigned crews, and probably on divisions where business is so heavy that 60 engines per day or over are despatched from the terminal; but the writer's experience is that where assigned crews can be used on engines, the cost of repairs, the amount of fuel consumed and the class of service obtained, will all be more satisfactory.

He therefore regards pooling as a practice that may be necessary under certain conditions, but that is certainly not desirable if the alternative system can be satisfactorily carried out.

FIFTY-TON GONDOLA CAR.

The Chicago, Milwaukee & St. Paul has built a number of 50-ton gondola cars with Bettendorf steel underframes at the Milwaukee shops. The car is 42 ft. 9 in. long over the end sills and 41 ft. inside. The width inside is 8 ft. 7 in. and the height of the sides above the floor is 4 ft. 3⅜ in. The top side board, 11¾ in. wide, is flared out 5¼ in., making the width at the top of the car 9 ft. 5½ in., to permit of a larger pile of lading.

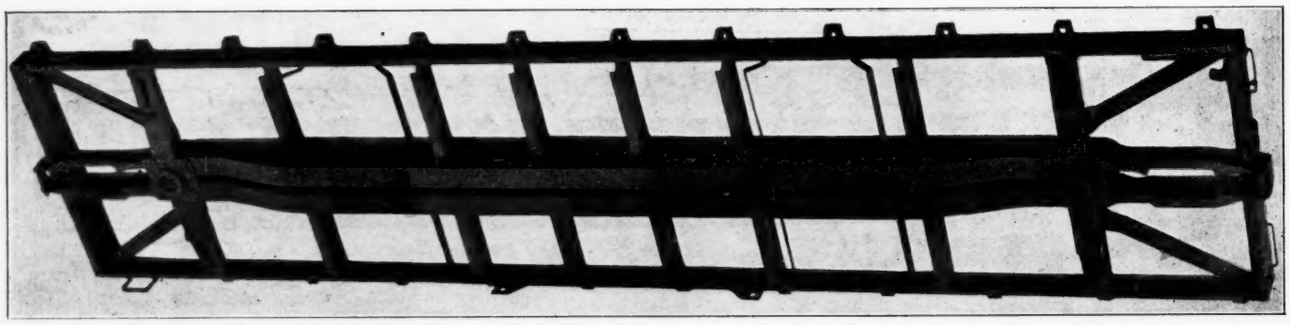
There are four narrow hoppers with drop bottom doors operated by a simple mechanism, shown on the drawing, and sup-



Fifty-Ton Gondola Car with Steel Underframe. Chicago, Milwaukee & St. Paul.

plied by the Enterprise Car Company, Chicago. The hoppers are between the center and side sills, and the chain sheaves for operating the doors are between the center sills, with a shaft extending out to a ratchet wheel at the side sill.

The Bettendorf steel underframe is built complete and shipped to the company's shops ready for the addition of the wood upperframe. The center sills are two 24-in. I beams, which are split in the web at the ends and reduced to 16 in. depth at the bolsters, where they are riveted to the cast-steel draft sills. The side sills are 12-in. channels; the stake pockets are riveted directly to them. The body bolster is built up of two



Bottom View of Bettendorf Steel Underframe for 50-Ton Gondola Car, Chicago, Milwaukee & St. Paul.

8-in. I beams with cover plates; the six cross bearers on each side are made of the same size beams. The corners of the car are braced by 7-in. flanged channels extending from the center plate to the end sill. The car is mounted on Bettendorf boltless trucks. The total weight is 41,500 lbs.

INTERNATIONAL RAILWAY CONGRESS.

The proceedings of the International Railway Congress held at Berne, Switzerland, July 4 to July 16, are not entirely available as yet. The subject which aroused the most discussion was Railway Statistics, particularly ton-mile statistics. Of the reports on statistics and accounting, the one principally discussed was that of W. M. Acworth, who was sent as a delegate by the Board of Trade.

TON-MILE STATISTICS.

In presenting his report, Mr. Acworth said he wanted to make it perfectly clear that what he said represented his own attitude and nothing else. He said he believed that there were no principles of statistics and no uniform classification of expenses by English railways. He had never been able to understand the objection in England to ton-mile statistics. He did not agree with the statement that the cost of keeping such statistics was excessive, nor that traffic conditions made it extremely difficult to get at the figures. He understood that, in the case of one company, the cost of compiling such statistics was $5,000 for $55,000,000 of revenue.

C. W. Appleyard, of the South African Railway Administration, presented the report of Sir Thomas Price, based on the practise of the Central South African Railways. After the Washington meeting in 1905, these roads decided to adopt American methods, with such modification as local conditions required, and the ton-mile statistics had proved valuable. Other reports were presented by A. J. County, of the Pennsylvania Railroad [a part of this report is printed elsewhere in this issue], and by Mr. Barriol, of the Paris, Lyons and Mediterranean.

Sir Charles Owens, of the London & Southwestern, and Sam Fay, of the Great Central, criticised Mr. Acworth strongly. Sir Charles Owens said that his report was not representative of British railway methods. With regard to ton-mile statistics, they had been tried in England and found unsuccessful. As a basis for making rates they meant nothing, because, for example, the average rate per ton on millinery and coal would give no indication for the proper rate for rails. He said the statement that there were no principles in railway accounting was preposterous, and called attention to the reports published in the Blue Books. Mr. Fay said that the English objection to ton-mile statistics was that they did not tell the truth. Figures for the average charges per ton per mile on a wide variety of miscellaneous freight would not represent the charge per ton per mile as paid by the public or indicate the cost per ton per mile when more than one company handled the same ton of freight. He illustrated the complexity of the problem with examples in which several railways participated in carrying the same shipment, the cost to each being complicated by different terms of trackage agreements, etc. He said further:

"A 12-ton truck will convey 12 tons of one particular class of merchandise, while other common merchandise of great bulk requires 12 trucks to convey the same tonnage. Thus 12 tons in the one case is on a vehicle with four wheels wearing out the permanent way; in the other, 48 wheels are wearing out the same permanent way. Further, the non-paying weight handled in one case would be about 6 tons, and in the other 72 tons, although the revenue tonnage in both cases is identical and ton-mileage statistics treat them as of the same value. Out of this hotch-potch of receipts and expenses divisible between companies without regard to rate charged or work performed, and of units that refuse to unify, English companies are asked to compile ton-mileage statistics. Is it to be wondered at that we object and assert that the cost of such a compilation would be sheer waste of hard-earned money?

"Turning now to the question of ton-mileage as an aid to day-to-day management and the manipulation of traffic, I believe that there is little, if any, difference, except in name, between the methods employed on the English railways and those of the United States. In the latter country, I believe I am correct in saying that for the purposes of movement of traffic, cars are averaged at 'per ton,' and the gross tonnage of such cars is given as the measure of the engine load for each particular section of line. In England the method usually adopted is to deal with the wagon according to its class—i. e., weight and bulk capacity—either full or empty, as the measure of the engine load. While loading is dealt with in America under the name of 'tons' in England it is dealt with under the name of 'wagons,' the average gross tonnage of which is known. The methods, as I have said, are almost identical, the names alone varying. The mass of information which is at the disposal of English railway managers in the shape of statistics—weekly, monthly, or half-yearly—is much on the lines of the information, although in a different form, enumerated by Sir Thomas Price as common in the English colonies. The English railway managers shy at averages as much as possible, and endeavor to get correct facts in the smallest possible compass. They consider that by their methods they get to know more of the actual conditions than by worshiping the god of averages alone."

W. H. Hyde, of the Great Eastern Railway, agreed with the previous speakers, and also said that what was essential was that executive officers should be in possession of detailed statistics as regarded the movement of the traffic, and that such statistics

should be in their hands as soon as the traffic passed. That was the practice which prevailed on British railways at the present time, and no quantity of ton-mile figures could effectively replace them.

Alfred Aslett, of the Furness Railway, said that ton-mile statistics were utterly useless for English railways, except in the case of bulk traffic. How, for instance, could such statistics deal with the carriage of live-stock, which was not handled by weight?

H. C. Allen, of the Buenos Ayres Great Southern, said that although his company had kept ton-mileage and passenger ton-mileage statistics for 20 years, they had found them of practically little or no use, and would discontinue them but for the fact that the information had to be prepared for the Argentine Government annual statistical returns. Some years ago his company kept statistics of the percentage of freight to capacity hauled, but had to put an end to that as it was found the staff were devoting all their energy to securing effective statistical results rather than to the earning of dividends or satisfying public requirements. Statistics might be overdone, and at one time they certainly were overdone on the Buenos Ayres Great Southern. He was satisfied that had the Argentine railways never gone in for ton-mileage they would not do so to-day. Their traffic varied from month to month with the seasons. One month the line was carrying wool, occupying 20 per cent. of the wagon capacity, but earning $13.50 per ton, while the following month the line would be carrying grain, occupying the full capacity of the wagons, but only earning $1.50 per ton. With such varying classifications, what possible use could be made of ton-mileage averages? Again, taking the so-called gross ton-mileage which the Argentine Government insisted on, that was merely the total net weight of the cars divided by the axles, and a unit of two axles per car was adopted for all statistical progress, and this, multiplied by the total vehicle-miles run plus total ton-mileage, gave the so-called gross ton-mileage. As, however, the railways had in service all classes of cars, from an 8-ton car weighing 10 tons to a 45-ton car weighing 15 tons, what reliability could be placed on the average gross ton-mile? Efficiency in operation could only be obtained by every traffic employee intelligently watching and recording every train coming under his notice and reporting promptly where there was any evidence of careless loading or extravagance in hauling power. It was hoped that by carefully recording gross ton-mile statistics that it would have been possible to appropriate the cost as between passengers and goods, but after many experiments it was agreed that, although statistics showed it cost 2½ times as much to carry a passenger ton one mile as a ton of freight, this was disproved by subsequent experience.

Arthur Hale, of the American Railway Association, said that he had had the handling of fast freight traffic on the Pennsylvania Railroad and the Chesapeake & Ohio, and he had found ton-mile statistics of very great value; when the cost of handling traffic in the yards and a few other details of the kind were added, the ton-mile statistics had proved most useful in their work and had given good results generally. On the Baltimore & Ohio, conditions existed which were very similar to the cases quoted by Mr. Fay, but they were able to make up their ton-mile figures without trouble.

Theodore Voorhees, of the Philadelphia & Reading, said that in the matter of statistics a comparison as between different roads was of little value unless all the attendant circumstances were taken into account. For example, the Pennsylvania Railroad had a traffic amounting to ten times that of the Philadelphia & Reading. The characteristics of the two lines were entirely different. The Reading was practically a terminal road, while the Pennsylvania carried a great volume of through traffic, and it was necessary in any comparisons between the statistics of the two systems to take into account the proportion of terminal work to the total. Unless that were done a comparison between the two roads would be quite misleading. It was extremely difficult to arrive at any real costs in railway work, outside of certain main items such as the gross earnings, the gross expenditure, and the net balance which resulted. Immediately one went outside those main figures and attempted an analysis as to the cost of any items in management it was futile to hope to get actual figures. Outside the ton-mile and the passenger-mile the human element entered into the problem. What proportion, for instance, of maintenance of track was to be charged to passenger service, and what proportion to freight service? It was the personal equation that entered into decisions of that kind. In this connection he might refer to the litigation in which the Reading had been engaged in connection with the 2-cent rate. In the course of that litigation the books of the company were submitted to the examination of experts on behalf of the state, and every facility was given in order, if possible, to ascertain what it really did cost to carry a passenger. The result was a total failure, the figures produced by the experts based on the same books resulting in diametrically opposite results.

R. M. Patterson, of the Pennsylvania Railroad, pointed out that the value of statistics was not in their compilation, but in their proper use. He made a comparison between ton-mileage figures on the New York and the Pennsylvania divisions of the Pennsylvania Railroad. He showed that the Pennsylvania division had a predominance of mineral traffic, with long haul, and the New York division had a predominance of merchandise traffic, with short haul. Ton-mileage statistics showed that the cost per ton per mile on the Philadelphia division was about 3 mills, and on the New York division about 8 mills. Facts like that developed the tendency to jump at conclusions, but ton-mile statistics were got out in greater detail, and it was shown that the difference was largely due to the difference in station costs of the two divisions. That showed that ton-mileage figures properly handled gave valuable information. Broadly speaking, while in a number of instances ton-mile statistics may have been wrongly used—and they had been used wrongly in America—still, it could be claimed that they had been used in many cases rightly and to great advantage. The discovery that station costs were responsible for the difference referred to, led him to consider the whole subject of operating large stations, and he had been led to the conclusion that the English railways were ahead of the American railways in that respect.

Mr. Appleyard said it seemed clear that any attempt to secure uniformity in regard to details must be fore-doomed to failure, and would probably prevent that advance that everybody was anxious to see. At the same time, and he had Sir Thomas Price's authority for saying that it might perhaps be possible to secure unanimity as to the principles on which statistics should be based. In that case comparisons might be made between results in different countries which were not possible at the present time. There could be no doubt as to the value of being able to make comparisons of that kind, and by being able to compare their own figures in South Africa with those of American roads they had secured substantial economies.

Col. Bonham-Carter, of the Madras & Southern Mahratta, said that he had been for 3½ years under-secretary for railway traffic and statistics to the government of India, and for seven years manager of a system of 1,600 miles. It seemed to him that many of the speeches which had been made did not make sufficient distinction between the reports which were compiled for the information of shareholders, and as to which there was some advantage in uniformity, and those other statistics, the temporary statistics, which were got out by every railway in the world at short intervals to keep the operating officers in touch with the conditions. The difficulty was as to deciding what portion of those operating statistics should be put into a more permanent shape. He had not in his experience found the government statistics, based on passenger and ton-miles, of any practical use. Any information which those figures gave could be obtained from operating statistics at a much earlier date, and in many cases passenger and ton-mile statistics could

be obtained from these operating statistics. He quoted an instance of the misleading results which statistics on the ton-mile basis gave.

William Mahl, of the Harriman Lines, said that Mr. County in his report had set out fully the practices of American railways. It would be noted that the railways in America were now governed in these matters by the orders of the Interstate Commerce Commission, and that they could not, if they wished, participate in any movement which had for its object a general classification, except with the proviso that its conclusions would be approved by the Interstate Commerce Commission. The adoption by the American railways of the passenger-mile and the ton-mile had been for purposes which had not been clearly defined in the course of the discussion. It was well that it should be made clear that the ton and passenger-mile had not been adopted for the purpose of making rates or as a unit of cost, but had been adopted as units of service performed primarily for the information of the management in the intelligent operation of their properties, and as an indication of the service given to the public and of the efficiency of the management. That fact was brought out in the results shown by American railways in the development of traffic, and in the increased service to the public. Every railway manager desired to increase the sale of his product, and the passenger-mile and the ton-mile figures of one year only stimulated him to break that record during the following 12 months. The aggregate ton or passenger-miles only were not sufficient for him; a knowledge of the direction of the passenger ton-miles was also wanted to the end that steps might be taken to equalize the traffic as far as conditions would permit. The rivalry between different American railways in hauling the largest average train loads was a matter of common knowledge. From it had resulted the exceptional improvement during the last 10 years. He could only quote in this connection from the reports of the company with which he was associated. On the Union Pacific Railroad the tons per train had increased from 279 in 1898 to 549 tons in 1909, or, to put it in another way, with an increase in 11 years of only 11 per cent. in locomotive-miles the company had increased its freight service to the public by 141 per cent. On the Southern Pacific the tons per train had increased from 155 in 1885 to 474 tons in 1909, or in the 25 years covered by that period, with an increase in train-mileage of about 232 per cent., the company had increased its service to the public by 598 per cent. The information concerning the ton and train-mileage had enabled the American railway manager to direct his abilities into the proper groove and these statistics had contributed largely to the achievements of American railways in the transportation of the immense tonnage hauled and to the low cost at which the service was performed. It should be borne in mind that American railways dealt with the public as sellers of transportation, and their sales were measured and adjusted by the miles the passengers or the freight was carried. It was but natural that they should want to know as much as possible about the product they were selling, both with a view to increasing the sale of the product and reducing its cost.

Mr. Acworth, in replying to the discussion, said that some of his English critics appeared to be under the impression that he had said that there were no statistics of English railways, but the criticism he had made was that there were no principles of statistics. He had not yet heard any statement as to the principles employed. It was a great pity that the English railway companies did not get out ton and passenger-mile statistics as the figures would show that some of the criticisms levelled against English railway companies had no foundation in fact. Again and again he had heard it said that English railway passenger fares were the highest in the world, a charge based on the penny per mile of the normal tariff. If passenger-mile statistics were got out the result would be to show that the English fares were not the highest, but very nearly the lowest in the world.

It was true that freight rates in England were high, but there were excellent reasons for that. The American roads took ton-mile statistics for granted, and it came to this: that the civilized world was on one side and Great Britain was on the other. He had never expected to convert English railwaymen to a belief in ton-mile statistics, and that this meeting was certainly not the place to make so unprofitable an experiment. The fact that such statistics had been tried on the Great Western Railway and given up as useless was quoted as an argument against ton-mile statistics. As a matter of fact they had not been used on the Great Western for about 40 years. Sir Charles Owens, while referring to the Great Western, had not told delegates that there was in England at this moment a railway at least three times as large as the Great Western was when it experimented with ton-mile statistics, and that this English railway had kept ton-mile statistics for 10 years with results so entirely satisfactory that it was in contemplation to extend the principle to passenger-mileage. To ask what economies had been effected by the use of ton-mile statistics was really not to the point, because if anyone regarded ton-mile statistics in that way he would be disappointed. Ton-mile statistics were merely a diagnosis of the position of a road, not a cure for troubles.

Mr. Fay had quoted examples of complicated working, but if Mr. Fay would study the schedule in the report which applied to the production of ton-mile statistics he would find that his cases had been dealt with, and that the only receipts which it was suggested should be entered in such an account were the receipts from the company's own trucks carried on the company's own lines. Mr. Fay complained that he had not asked railway companies for the necessary statistics. He had deliberately refrained from doing that because he felt that his report should have nothing to do with internal statistics, but merely with the statistics which were produced for publication. He had no doubt at all that a mass of statistics was got out by English railway companies for purposes of daily control, but he was dealing in his report with the returns made to shareholders or to Parliament.

RAIL JOINTS.

In the group of reports dealing with rail joints, the points selected for elucidation were the reduction in the number of joints by increasing the length of the rails, the maximum length to be adopted for ordinary track rails, the welding of rail joints, and the strengthening of rail joints.

The reporter for Great Britain and English-speaking countries was Alexander Ross, of the Great Northern Railway (England). In Great Britain and Ireland all companies had been gradually increasing the length of the rails, and it would appear that from the near future a length of 45 ft. might be taken as the standard. While recognizing the advantages of a continuous rail, expansion and contraction prevented the use of welded joints. In the United States the standard length of rail was now 33 ft. In other English-speaking countries the length of rail employed varied from 30 to 40 ft.

Practice on the Continent and in Egypt was the subject matter of two reports, one by Mr. Chateau, of the French State Railways, and the other by Friedrich Kramer, of the Hungarian State Railways. In France, Belgium, Italy, Spain and Portugal much attention, said Mr. Chateau, had been paid to rail lengthening, the average length now adopted being 59 ft., while rails up to 72 ft. 2 in. were employed in current practice. The welding of rail joints found few advocates.

He believed that there would be a further increase in the length of the rail, and that such increase would involve a radical change in the type of joint employed. The initial step towards a further increase in the length of the rail was the evolution of a joint without bolts and of the frictionless type. It would also be necessary to adopt means of preventing the fracture of very long rails. A type of fishjoint which had given great satisfaction was that used by the French Eastern Railway, and a very similar joint was employed by the French Northern Company. The two-tie joint was used rather extensively in Italy, but more recently

an ordinary suspended joint had been introduced. A joint without bolts was now being tried on the Paris Metropolitan, and so far had given satisfaction. A general tendency was evident to stiffen the joint by bringing the joint ties closer together. It was well known that rails in service assumed a nearly uniform curvature, and this curvature was one of the causes of the shocks produced at the joints. The process of straightening the rails could therefore be adopted in order to restore to them in some measure the properties they possessed when new, and in order to improve joints which had become weakened. If this were combined with recutting the ends of the rails, the drilling of new holes, and the supply of new fishplates, then a complete solution would have been obtained of the problem of the improvement of worn joints. This subject would assume greater importance when the present long lengths of rails in service began to show signs of wear and tear.

Mr. Kramer, whose report referred to practice in Austria-Hungary, Roumania, Bulgaria, Servia, Turkey and Egypt, noted a similar increase in the length of rail following the practice in other countries. The replies he had received suggested that it would be possible to increase the length of rail to 78 ft. 8 in., if suitable provision were made to replace broken rails quickly without interference with traffic. The final determination of the greatest length suitable for ordinary track rails could only be settled by experience. A few administrations had experimented with welded joints, but there was little prospect of their introduction on main lines. He noted a tendency to improve the rail joint without altering the general principle of design.

STEEL FOR FREIGHT AND PASSENGER CARS.

The report for America by D. F. Crawford, of the Pennsylvania Lines West, was published in our issue of April 1, 1910. R. L. Ettenger, of the Southern Railway, also reported for the United States, his subject being the use of special steel of high resistance for locomotive and rolling stock construction. With regard to axles for locomotives, the replies received indicated that the experiments made with alloy steel for locomotive axles had not resulted in a betterment of the service or freedom from failures. The use of special steels properly heat treated after being rolled into locomotive tires was now being made the subject of tests in different parts of the country. Tests were also being carried out with heat treated alloy steels for springs, piston rods and crank pins, but it was yet too early to draw definite conclusions.

Otto Honigsberg reported for countries belonging to the Verein Deutscher Eisenbahn-Verwaltungen, representing 59,502 miles of line. The replies received showed that crucible steel, having an ultimate tensile strength of 85,336 lbs. per square inch, was used by several administrations for piston rods, cranks, eccentric rods, crank pins, coupling pins, cross head pins, etc. Nickel steel was used by several railways for coupling rods, and pins, crank pins and about pinion wheels. The favorable results obtained by the Prussian State Railways with pins made of compound steel or of special mild steel for case hardening purposes used on their superheated steam locomotives which do heavy work, were worth noting.

Mr. Le Blant, of the French Eastern Railway, reported for those administrations not included within the scope of other reports. He said that a fair number of railways were making trials of crank axles of locomotives made of special steel of high resistance, but only one company, the Northern of France, had definitely decided to extend the application of such material.

STRENGTHENING OF TRACK.

The reports dealing with the strengthening of track were divided into two parts; those dealing with the methods employed to attain increased strength of road, and the second part with the strengthening of bridges.

The reporter for Great Britain on both subjects was J. W. Jacomb-Hood, of the London & South-Western. He said that the strengthening of the track apart from structures to carry the track could not be the only condition and might not even be one of the conditions upon which the increased weight and speed of trains depended. At the present day total engine loads on British railways were quite commonly up to 100 tons, with individual axle loads exceeding 20 tons, while the speed of trains and the total train-miles had greatly increased during the past thirty years. These increases in loads, speeds and density of traffic were on tracks that were only slightly improved over those of earlier years. Between 1880 and 1910 what improvement had taken place had been rather one of condition than of improvement by radical alteration in design. It was probably true that the average weight of rail on the principal lines of Great Britain was still somewhere between 80 and 90 lbs., and represented no considerable increase from the conditions that ruled 30 years ago. There had been no drastic change in the jointing of the rails, nor had the chairs, fastenings or ties varied in any marked degree. It was clear, therefore, that a conservative tendency in trackwork had not interfered with or retarded developments in loads and speeds. The important question now to be considered was whether the point had been reached when the general conditions of track were operating to prevent further progress. The construction gage of railways in Great Britain, giving the loading or running gage, might be taken as permanently fixed. Locomotive design was already being hampered by the restrictions of the running gage, and the weight of machines was therefore reaching, if it had not already reached, its limit. Increased adhesion might improve the power of locomotives to haul heavy loads, but such loads would be spread over more axles, and it was improbable that individual axle loads would be much affected. Therefore, the extended distribution of load could be desregarded except in respect of its effect upon the service of the track. Speeds, however, stood upon a somewhat different footing. It was not unreasonable to suggest that railways in Great Britain might have to anticipate schedule speeds for fast passenger traffic of 70 miles an hour, involving maximum speeds during portions of the journey of at least 100 miles an hour. With regard to the improvement of the track to meet the increased speed, experience and mathematical analysis suggested that a properly designed and supported rail, weighing 100 lbs. per yard, would meet the conditions, but to give the best results for high speed it was desirable that a section of rail with a greater total depth than was laid down in the British standard specification without much disturbance of the relative proportions of the head and foot should be adopted. It seemed probable that, as the length of rail, 45 ft. might be generally adopted. The joint was likely to remain the weak spot in British track practice. Monsieur Cuenot's investigations pointed to the possibility of the joint difficulties being reduced by the application of the principle of a direct support, and it seemed likely that a suitable design for a supported joint would become a necessity in the case of track designs for improved services. Two forms of cross-tie were now being tested, one of reinforced concrete and the other a combination of steel and timber, and as to security of fastenings the combination tie would certainly be superior. Broadly speaking, it would be good practice to use a heavy rail and to reduce the subordinate equipment to as few parts as possible, and a high ideal of perfection in up-keep was to be recommended, even though a larger expenditure as compared with past practice was necessary.

Mr. Blum, who reported for all countries not specially dealt with in other reports, expressed the opinion that the primary reason for the strengthening of tracks was not the increase in the speed of the wheel loads, but the greater increase in the traffic, particularly freight traffic. The weakest part of the track, the rail joint, was stated to be most fatigued not by the fast trains but by the slower running trains. Speeds of 130.5 miles an hour had actually been attained on a line having a weaker superstructure than that now used for the express lines of the Prussian State Railways without any danger to the track, and but little anxiety need be felt if higher speeds were used on the existing track. That was the opinion of the majority of the railways from which he had elicited opinions. Opinions dif-

fered as to the extreme limits of speed admissible, but many of the railway officials consulted were of the opinion that speeds up to 80 miles an hour and wheel loads of 9 tons would be admissible.

Hermann Rosche, who reported for Eastern Europe, expressed the opinion that the cross-tie superstructure at present in common use could be made to serve the needs of heavier wheel loads and higher speeds. It would be necessary, however, to use 100-lb. rails.

The report for America was brought up by M. L. Byers, of the Missouri Pacific. Mr. Byers pointed out that the maximum speed of trains had during the past 20 years increased from about 60 miles an hour to over 90 miles, and that there had contemporaneously been a considerable increase in the weight of locomotives culminating in the huge Mallet compounds placed in service during recent years. The long series of tests of Mr. Conrad, of the Paris, Lyons & Mediterranean, indicated that rail wear on straight lines occurred less rapidly the stiffer the rail, and his conclusion was that the wear increased in inverse proportion to the deflection. The result has, in a general way, been confirmed by experiments of the Pennsylvania Lines and others. He believed that the extent to which the present standard American track could be strengthened was so great in proportion to the probable increased requirements of higher speed in the near future as to make improbable the immediate need for straight track, and one or two rail sections especially designed for a radical change in the type of roadway construction. He believed that the use of one rail section, especially designed for curves, offered possibilities of economy in rail wear, and should be further investigated, and that no compromise section of rail could be designed which would be economical under all conditions of curvature.

The conclusion at which the meeting arrived on the subject of track improvement in a general way confirmed the expressed opinions of the reporters, and indicated that, for the moment, the only practical direction by means of which the strengthening of the track could be carried out was in relation to cross-ties. Formal resolutions were adopted by the section, which will no doubt be confirmed, that all companies would be well advised to investigate with a greater approach to accuracy than hitherto the important question of the dynamic action of rolling stock passing over tracks at high speeds.

FOREIGN RAILWAY NOTES.

The French Chambers have approved the construction of 540 miles of railway in Algiers, in many different sections, but part of them such that they will make a line parallel with the coast farther in the interior than the present line.

President Nilo Peçanha in his annual message to the Brazilian Congress says: "Facts relative to the railway situation of Brazil show the uninterrupted efforts of the government to extend the railways into the interior of the country. While there was no great extension of trackage during 1909 it may be seen that during 1910 an extension of lines exceeding the greatest expectancies will be opened to traffic. During the past year 366 miles of railway, of which 290 miles belonged to the Federal Government and 76 miles to state governments, were opened to traffic. The total railway mileage of the country was increased from 11,844 miles to 12,183 miles. Within a few months lines to the extent of 1,477 miles will be placed in use, all under the ownership of or concession from the Federal Government, which fact indicates the desire of the government to develop means of transportation and secure the greatest possible results within its power. The construction now going on follows the policy of the formation of great interior systems, by means of the principal lines, by which districts of important commercial interests are knit together, extending the area with facilities for shipping products, and reducing the cost of transportation, subjecting it to a system of simple and uniform freight rates."

TRANSPORTATION AND TRAFFIC IN HOLLAND.*

BY LOGAN G. M'PHERSON.

The area of Holland is 12,648 miles; its population in 1907 was 5,747,269.

Prosperity was first attained by the Netherlands because the great cities of Amsterdam and Rotterdam are at the mouths of the Amstel and the Rhine, over which commerce is conveyed to and from the interiors of Belgium and Germany. It was this traffic that gave Amsterdam medieval prominence as a port of reception and distribution for the wares of other countries, and in this respect it retains a foremost rank, its activity as a seaport, as a mart for the products of the Dutch colonies of the East Indies and as the center of the diamond cutting industry accounting for the fact that Amsterdam is a great financial center.

The country is devoted in large measure to agriculture, but has also attained a certain development in manufacturing. Cotton goods are made in the Twenthe and Brabant district; rice from Japan and India is distributed throughout Europe from the mills at the Zaanstreek. Holland also refines crude sugar from the West Indies, and that extracted from the beet.

The lands of Holland in large part lie below the level of the sea from which they are protected by dunes formed by the wind and by dykes, the erection of which began hundreds of years ago. The saturation of the land led to the digging of ditches for draining the soil which the farmers cultivated to that degree of selfsufficiency characteristic of the peoples of central Europe. It was an easy matter to propel a small boat along one of these ditches. The development into a small and then into a larger canal was easy and natural. Thus have grown the canals of Holland, which now aggregate a length of 2,408 miles. There have been constructed and are maintained in part by the national government—342 miles; in part by provincial governments—493 miles; in part by local governments—805 miles; by various combinations of national, provincial and local governments—148 miles; by private companies—372 miles; by combination of private companies and one or another government—248 miles. Practically every town and almost every farm in the country touches one of these canals, which are naturally the generally accepted means of transportation for freight of all kinds. Under the regular control of the government are also 23 waterways, with a length of 554 miles, formed by the principal rivers.

Since 1900 no dues and tolls have been charged by the national government for the use of the rivers and canals under its supervision. On the canals owned by private companies, certain tolls are charged, but they have to be approved by the government and are only nominal. In some few cases certain tolls are levied by the separate provinces. These, however, are also but nominal, the entire extent of the inland waterways upon which tolls of any kind are levied being but a small percentage of the total.

The charges made by the watercraft for transportation on the rivers and canals are not under any governmental regulation and there is no combination among the proprietors of the craft for the maintenance of rates, the boatmen charging what they can get.

There are two companies which own about 700 boats each. About 150 separate lines of small steamers give regular service to every town in Holland and there are many craft, each owned by the boatman, who lives upon it with his family. Ferry lines and lighters are owned by the railways and many of the manufacturing companies own and operate craft engaged especially in their service.

In such a fogbound, webfooted, amphibious country it might not seem that there were any need for railways. The canals have ever been but little used for the carrying of passengers, but there are land roads which have gradually attained a length of about 3,000 miles and the demand for passenger transportation in the interior of Holland has not been great. Yet there was need for railways, and the story of their development is interestingly told by Edwin A. Pratt in his book, "Railways and Their Rates." William I. King, of Holland, in 1833 had plans prepared for a

*A preliminary report to the National Waterways Commission.

railway from Amsterdam to connect at the border with a German line to Cologne, it being his belief that Holland could not hold her own in international traffic unless the water thoroughfares were supplemented by the more rapid means of transportation which are not frozen over in winter as are the waterways. The monarch, however, was unable to obtain the necessary capital and the first line constructed in Holland was by a private company from Amsterdam to Haarlem in 1836. A commission, subsequently instituted, reported that, although holding as a general principle that the building of railways should be left to private enterprise, they recommended that a line from Amsterdam to the German frontier should be constructed by the state. The States General rejected the recommendation, but the patriotic monarch obtained the necessary capital upon his personal guarantee at 4½ per cent. interest. The government officials subsequently aided in the work of construction and in the general operation. The cost of the line so far exceeded the estimates that at the time of his death William I. had paid out of his private fortune, and to his absolute loss, $500,000 in interest.

The management of the line speedily drifted into hopeless inefficiency and it was transferred with other concessions in 1844 to a private company which found it necessary to reconstruct the deplorably defective plant. After this was done there was no traffic, about all that came to the railway being during the periods when low water or ice impaired navigation. The coterie of Englishmen who had obtained the concession secured the services of a traffic manager who worked out the idea that if full trainloads of coal could be secured at the Westphalian mines in Germany they could be run through for consumption in Holland at a very low rate and that the cars could obtain return loading, likewise at a very low rate, of Spanish ore from the ports. Both iron masters and colliery owners perceived the advantage that the exceedingly low rates for shipments in full trainloads would give them, and contributed their efforts toward building up the traffic. It was not forthcoming in adequate volume, however, until the railway company encouraged its agents to combine the business of coal dealers with their regular duties. In this way the consumption of Westphalian coal was increased in Holland to the considerable displacement of the English coal which had formerly monopolized the markets. The railway company became so prosperous that its shares went to a premium.

Two or three other lines were built by private capital in the next dozen or fifteen years and had a hard struggle for existence. In 1860 the government perceived the necessity for additional rail communication, specially for the benefit of the northeastern provinces which had no railway facilities at all. The expense of construction, because of the necessity for numerous bridges and the difficulty of obtaining sure foundations, deterred the subscription of private capital. Therefore the government built a number of lines and bought up certain small railways that had got into pecuniary difficulties. It was opposed to the direct operation of the railways by the state, and in 1863 conceded to a "company for the Exploitation of the State Railways," the permanent way and structures of the state lines, it being agreed that the company was to provide the rolling stock and undertake the management. In 1890 the government purchased the lines developed from the nucleus formed by the original project for the development of the Westphalian coal traffic, and in the same year entered into a new arrangement by which the operation of all the state lines is divided between the Company for the Exploitation of the State Railways and the Holland Iron Railway Company, giving to each running powers over the lines of the other to enable it to reach any town to which it would otherwise not have access. The result of this is to provide competing routes to and from any place in the country, stimulating a service that provides a great number of quick trains carrying goods in competition with the waterways at exceedingly low rates with a speed and promptness for which quick service charge would be made in either Germany or France.

Each company pays a fixed rental for the state lines it operates and its charges are under scales authorized by the minister of railways. When either company attains a dividend exceeding 4 per cent. a portion of the surplus is to be paid to the state. Should the dividend fall below 3 per cent. for two years in succession, the company can withdraw from its contract. The state can take over the operation of the lines at any time after giving one year's notice. The total length of line operated by these two companies is 1,778 miles. There are about 400 miles of other lines, mostly electric and suburban, operated by private companies. The investment of the government in the two principal systems is about $140,000,000; the total outstanding capitalization of the concessionaire companies is $100,418,600. These companies have paid dividends ranging respectively from 4½ and 5 per cent. in 1899 to 3 per cent. in 1908, and the rental paid to the government averages about 1½ per cent. upon its investment. With dividends at 3 per cent., the return upon the total capital therefore averages about 2.4 per cent. The operating companies, in that they did not provide the capital expended on the real estate and structures, do not have to provide either interest or sinking fund therefor.

As nearly as can be calculated from available data, the revenue of the operating companies from the transportation of passengers, baggage and freight during 1908 was $21,038,725, and their expenditures for maintenance and operation, $17,436,437. The revenue from passengers and baggage is about equal to that derived from freight, for which the charges have to be kept at the lowest possible scale in competition with the waterways, and in competition with the Prussian railways leading from the ports of Germany.

The statistics of the rivers and canals in the Ministry of Waterstaat are very incomplete. It is not possible to arrive at the total capital expenditure upon the inland waterways of Holland, as this expenditure has been made throughout long periods of time, not only by the national government but by provinces and communities. Adequate records of the totals have not been kept, and if they had been it would be impossible to allocate them between the purposes of drainage and navigation. The annual expenditure by the national government upon the maintenance of the inland waterways has during the past ten years ranged downward from about $3,000,000 to $2,000,000 a year. The totals of the maintenance expenditures of the provincial and local governments and the private companies could not be procured. Statistics of the traffic are also unobtainable, but it is estimated that of the freight transported in Holland the inland waterways carry 90 per cent. and the railways 10 per cent., or perhaps a little more.

The ascertainable facts and statistics in regard to transportation and traffic in Holland show that neither the national government nor the provincial or local governments receive any return upon the capital expended in the construction and improvement of the rivers and canals; that upon the limited extent for the use of which tolls are charged these tolls are but nominal, the expenditure of the various governments for maintenance and operation being, in the largest part, without offset. The expenditures for the maintenance and operation of the railways are defrayed by the lessee corporations charged with their administration. These companies have also been able to pay dividends to their shareholders, as well as a rental to the government that averages 1½ per cent. upon the capital investment, and the government also shares in the dividends when they exceed 4 per cent. That is, even in Holland, the one country in the world where it might reasonably be expected that the use of the inland waterways would be attended with direct pecuniary profit, they not only pay no return upon capital but do not meet their current expenditure. In this one country of the world where it might be expected that the management of the railways could not be other than a losing struggle for their existence, these railways not only pay a return upon capital, but dividends to shareholders.

In Tunis, a new railway gives an outlet to a very valuable deposit of phosphate rock, and passes over a plateau which under the Romans was very productive, and is now full of interesting ruins.

THE RIGHT TO STRIKE: ITS LIMITATIONS.*

BY JOSEPH J. FEELY.

What limitations are there upon the right of a large group of men to combine and strike when such action directly imperils the safety or welfare of the public? How far can such forces be controlled by organized society through the mandates of its courts, the only tribunals that the public has devised for interpreting and applying the rules which must govern the conflicting conduct of men?

Novel questions have recently arisen by reason of combinations of capitalists, yet the courts have found little difficulty in dealing with and satisfactorily settling such questions, not alone by reason of the few statutes which have been passed upon the subject, but rather by the application of those time-honored principles of justice and equity which have received the sanction of ages. The law is not inadequate nor the courts impotent to deal with the equally novel and important questions presented with so much aggressiveness by combinations of laborers.

A strike may be defined to be a cessation from employment by two or more persons, pursuant to a common design or understanding, for a cause other than a mutual termination of employment by employer and employee. A strike as the public has come to recognize and understand it has certain characteristics not pertaining to the ordinary quitting of employment by an employee. In the first place, the striker does not really wish to relinquish his employment. He simply aims to interrupt the ordinary course of business to which he has been a party as a means of coercing the employer, through the inconvenience and loss which his action causes, to accede to his demands. His quitting employment is, therefore, but a means to attain an end and both must be lawful to justify the action taken.

Moreover, in the ordinary strike the grievance is usually not so much that of the individual as that of a combination of individuals to gain what is termed a mutual benefit. Furthermore, the joint action of several persons quitting their employment at a prearranged time is entirely different in character and effect from the ordinary act of quitting employment by the individual laborer.

It has been frequently stated by labor leaders and others, even by tribunals who should weigh their words with more exactness and care, that laborers have a right to enter into combination and to strike for whatever reason they choose or for no reason at all. Such a broad statement is, however, inaccurate and frequently misleading, for the right to strike, as an examination of the authorities plainly shows, is not an absolute right, but one which, like the great majority of privileges which the citizen possesses, is limited by the co-equal rights of others.

Ordinarily, in the case of an effective strike, but two parties are primarily affected—the employer and the striking employee, though the public is in the end the party most surely, if but indirectly, affected by every strike, for upon the result of the strike depends the transfer of some economic advantage. For instance, if the strike be one to enforce the familiar demand for shorter hours or higher wages, its success means a higher cost of the article produced, and this higher cost it can safely be asserted is not long borne by the employer, but is soon shifted by him to the consuming public in the form of a higher price for the article produced.

There is, however, a class of strikes in which the public is directly affected, and in the consequence of which it has a paramount interest, as, for instance, strikes upon public-service instrumentalities which interrupt commerce, transportation, communication or other utilities essential to the welfare of the public. In such a strike the striking employees know that their unrestrained power of interference with the operation of those instrumentalities, which society has created for its welfare and convenience, supported (as are the strikers) by its patronage, and the consequent annoyance is the most effective weapon which the strikers possess to coerce theemployer into acceding to their demands. The courts have had occasion to give but slight judicial attention to this class of cases lately so menacing to the public.

One is frequently met by the statement that what one may do the many may do. That is obviously not true, for the reason that the act of the many is not the same in intention or effect as the individual act. A man may walk down the street as he chooses, but a body of men may not walk down the same street in procession without a permit from the public authorities. Here is a clear ilustration that the right of the individual to walk upon the street is subject to the limitation that he may not walk in concert with large numbers, even though he wishes so to do.

While the law permits the individual not under specific contract to quit his work arbitrarily and for little or no reason, his right to do this is subject to the limitation that he must not do so at such time or in such a manner as to destroy his employer's property or endanger the public safety. If he were engaged as engineer upon an engine, he would not be justified in quitting at a time when he had such a fire or head of steam on as might, by leaving the engine unattended, cause an explosion and so endanger the public safety or destroy his employer's property. Again, an individual under contract not terminable at will may not lawfully break his agreement, and so to cease work under such circumstances is unlawful. The character of the contract to work for another is such that except in certain peculiar instances public policy does not compel the specific performance thereof by the individual, although still branding the breach as illegal and awarding damages therefor.

In spite of the somewhat unsettled state of our law in this respect, it is clear that even the right of the individual to cease work is limited: (1) By the paramount right of the body politic to assure its own safety, and (2) by the co-equal rights of other individuals.

Notwithstanding the existence of these two general restrictions upon the individual's right, the value of freedom of movement and choice among its citizens is considered of such paramount importance to the community that the right of the individual to cease work is regarded as a right higher in degree than most of those rights with which it comes in contact, so that the single person may exercise his right for an arbitrary, absurd or illogical cause, if he will, or for any cause not affirmatively stamped by the law as illegal.

At the outset we encounter this striking difference between the status of the individual and that of the group, that whereas the privilege of the individual to work or not, as he sees fit, is treated as of the greatest importance to society at large, the right of the group to strike simultaneously, containing as it does, potentialities of far-reaching harm and destruction to the whole body politic through its many citizens affected, is regarded not as of supreme importance, but only as of equal rank with the privileges of others, and since the exercise of this right almost inevitably works intentional injury to others, those who take upon themselves to invoke its aid are held strictly accountable for its use in a justifiable manner and for a justifiable end. The privilege of using this right to quit work arbitrarily, which we see in the case of the individual, no longer exists in the group, who are permitted to avail themselves of it only when such use can be justified; it cannot be said to be justified when the damage inflicted is out of all proportion to the benefit sought for or when the end striven for is arbitrary or contrary to the accepted law

As the strike by a combination of individuals must be acts of individuals plus the effect of concerted action, the combination must of necessity be subject to such limitations as apply to individual action, and also to such limitations as are peculiar to the resulting action of the combination, for the reason that the power of concerted activity is essentially so different and so

*From an article in the *North American Review* for May, 1910.

vast, and its use so infinitely more coercive in comparison with individual effort, that its exercise in the same manner as that allowed to individual activity would completely overshadow resisting endeavor on the part of citizens acting severally. Clearly, then, the right to use such enormous power, a power derived from the very existence of organized society, must of necessity be a qualified privilege which can only be taken justifiably or reasonably with due regard to the rights of that society which makes its exercise possible, and not in such a manner as directly or intentionally to injure or unnecessarily interfere with or oppress the public.

In a recent case the Supreme Court of Massachusetts said:*

"There is a fact which puts a further limitation on what acts a labor union can legally do. That is the increase of power which a combination of citizens has over the individual citizen. Take, for example, the power of a labor union to compel by a strike compliance with its demands. Speaking generally, a strike to be successful means not only coercion and compulsion, but coercion and compulsion which, for practical purposes, are irresistible. A successful strike by laborers means in many if not in most cases that for practical purposes the strikers have such a control of the labor which the employer must have that he has to yield to their demands. A single individual may well be left to take his chances in a struggle with another individual. But in a struggle with a number of persons combined together to fight an individual the individual's chance is small, if it exists at all. It is plain that a strike by a combination of persons has a power of coercion which an individual does not have.

"The result of this greater power of coercion, on the part of a combination of individuals, is that what is lawful for an individual is not the test of what is lawful for a combination of individuals; or to state it in another way, there are things which it is lawful for an individual to do which it is not lawful for a combination of individuals to do.

"It is settled in this commonwealth, as we have already said, that the line within which a combination of individuals like a labor union must confine its actions is drawn much closer than in case of the same individuals acting separately."

In arriving at their conclusion upon this question, the courts have applied certain well-known principles which have received the approval of many ages in dealing with combinations, whatever their purpose. The court has inquired:

First: What is the purpose of the combination? (*a*) Is it a lawful purpose? (*b*) Is it an unlawful purpose?

If the combination is found to be for an unlawful purpose the court will enjoin the carrying out of such purpose by any means whatever.

Second: If the combination is found to be for a lawful purpose, are the means used or designed to be used to carry the combination into effect lawful or unlawful? If unlawful means are to be used the courts will interfere to prohibit such use.

The so-called "right to strike" is thus seen to resolve itself instead merely into a right to strike in order to attain a justifiable end. Our courts, especially those of Massachusetts, the only state in which the questions relating to this right have been considered in any extensive way, in passing upon cases involving the right to strike follow these general principles and seek to determine whether the purpose of the strike is one which a reasonable man would consider a justifiable end in view of all the surrounding circumstances, keeping in mind the co-equal rights of others and the general grounds of public policy.

The Supreme Court of Massachusetts has said:†

"It is settled in the commonwealth that the legality of a strike depends (in case the strikers are not under contract to work) upon the purpose for which the combination is formed—the purpose for which the employees strike."

Adopting this method, the courts have passed specifically upon a number of situations and have established certain causes as ones sufficiently meritorious to justify a strike and have labeled others as unjustifiable, and the right to strike can be said to exist only for the purpose of promoting a cause in the first class and to be non-existent where the cause falls within the second division.

Some instances in which such combinations were found to be for an unjustifiable end, hence an unlawful purpose, are:

Where the object was:

1. To secure a monopoly of a trade or calling.
2. To create or maintain a closed shop.
3. The sympathetic strike.
4. To procure the discharge of a workman because he does not belong to an organization.
5. To induce the violation of a contract on the part of a third person
6. To violate the actor's contract.
7. To enforce the collection of a fine on an employee levied for the purpose of compelling him to join in a strike.
8. To force upon the employer rules for arbitration made wholly by the union.
9. Improper interference with the right of the employers to have access to a free labor market.

It will be noticed that courts have largely had to consider such combined action as dealt with the interference of co-equal rights of the other individuals. The courts have said that "in this, as in every other case of equal rights, the right of each individual * * * may be said to end where that of another begins."

The right to labor is the primitive right of man; deny it to him and the right to live is denied. The right to labor includes the right to dispose of one's labor. The right to dispose of one's labor with full freedom involves the correlative duty on the part of others to abstain from any obstruction of the fullest exercise of such rights. The denial of this right not only affects the individual, but is an attack upon the public welfare and so is against public policy. For both of these reasons, therefore, the court will enjoin any unjustifiable infringement of this right.

Thus far have the courts gone in interpreting and applying the law for the preservation of individual rights, in defining what limitations shall be applied to combined action which interferes with co-equal rights of others as individuals. The application of the same principles would seem adequate to protect the public from the consequences of much of the hasty, inconsiderate, or improper concerted action in those cases where such action vitally affects the public welfare. Certainly the interest of the public should have as prompt and as effective consideration and protection as those of the individual or group of individuals.

The right of the body politic to assure its own safety is the highest conceivable right. Why should not the concerted action of large bodies of men deriving their income from the patronage of the public, tending directly to public injury, be subordinated to the paramount right of the body politic to assure its own safety? Why should the lesser rights be protected and the greater right be subjected to unrestrained attack?

Such paramount right of the public would seem to be a sufficient justification for legislative action creating tribunals to which matters growing out of industrial disputes *involving the public welfare* should be left for compulsory arbitration and settlement, as soon as the creation of such a tribunal be deemed expedient. Until such a method of controlling this sort of industrial strife be created, it will be the duty of courts to interfere, whenever it is shown, in due course of legal procedure, that the public safety or welfare is threatened to determine not only the legality of the issues involved, but also whether *in any event* the concerted action is such as is likely to endanger the public safety or welfare, and if such be found to be a fact, then by their mandate to prohibit such arbitrary concerted action on the part of any group of men.

*Pickett *vs.* Walsh, 192 Mass., 582, 586.
†Reynolds vs. Davis, 198, Mass., 294.

Certain railways west of St. Paul may enviously note that the harvest in Hungary is so extraordinarily great that the railways are laying sidings and building storehouses and buying or borrowing freight cars to enable them to handle it all. In good years Hungary may export the equivalent of 100,000,000 bushels of grain. The heaviest grain traffic is likely to be in the last half of July and the first half of August.

A SIMPLE METHOD FOR RERUNNING CURVE TRACK CENTERS.

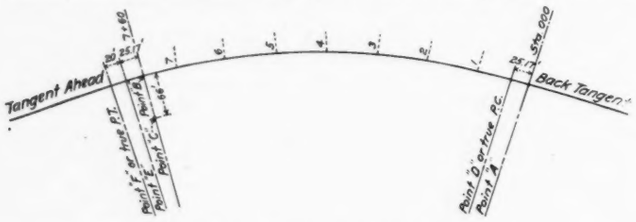
Railway engineers are often required to rerun curves on constructed lines not monumented, but text books give no methods for the doing of such work. The following method, illustrated by an example, is used by A. B. Hogue, a transitman for the Kanawha & Michigan, who says that it takes less time than the ordinary method of running the tangents to an intersection.

Referring to the figure herewith, point A is assumed as the P. C. and point B as the P. T. These points are obtained by sighting along the rail on tangent and measuring over half the gage, setting a hub between the rails, or putting a tack in the nearest tie. Having obtained these points by eye as nearly as possible, the problem is to obtain the true P. C., P. T. and degree of curve.

Setting up on A, stations are run between the rails to B, deflections from tangent being taken to each station. The deflections are set down in the field book, together with deflection differences. The following table contains this data for the curve illustrated:

Station.	Deflection.	Difference.	Station.	Deflection.	Difference.
7+60.....	7° 06′	.. ..	3	2° 31′	0° 58′
7	6° 32′	0° 59′	2	1° 33′	0° 58′
6	5° 33′	1° 01′	1	0° 35′	.. ..
5	4° 32′	1° 02′	0	.. ..	.. ..
4	3° 30′	0° 59′			

In the column of differences, select the difference running most uniformly and assume this as the chord deflection for the curve. In the example given the difference is taken as 59 min., so that the curve was evidently originally a 2-deg. curve, the assumption for original degree of curve being made to the



Rerunning Curve Track Centers.

nearest even 10 minutes or nearest degree, as obtained from the deflections to measured center line found between the rails. Multiply the distance from A to B by the degree of curve and divide by 200, thus obtaining the deflection angle for this length of curve. In the example given this is,

$$\frac{760 \times 2}{200} = 7.60 = 7 \text{ deg. } 36 \text{ min.}$$

Deflect this angle from the tangent to point C, approximately on radius through B, the distance from B to C being carefully measured. In the example this is 6.6 ft., which is divided by the sine of the central angle to obtain distance to shift P. C. In the example the central angle is 15 deg. 12 min., and 6.6 ÷ 0.26219 = 25.17 ft., the distance the true P. C. is to be moved ahead from point A on tangent.

To check: The deflection from A to Sta. 4, approximately the middle of the curve, was 3 deg. 30 min. The curve having been taken as a 2-deg. curve, the deflection should be 4 deg. 0 min., the difference between the true and the observed deflection being 30 min. The tan. for 30 min. = .00873; and 400 x .00873 = 3.49 ft., the distance a 2-deg. curve starting from A would strike inside of Sta. 4. Multiply the distance between A and D by the sine of the central angle subtended by 400 ft. of curve. In the example this is 25.17 x Sin. 8 deg. (.13917) = 3.50 ft., showing that a 2-deg. curve starting from D would strike Sta. 4. If good judgment is used in selecting the degree of curve from data obtained on the trial survey, the curve starting from the new P. C., point D, should strike center near the middle of the curve. If it does not, the difference will be found by the check calculations, and the correct radius and proper shift for P. C. can be obtained by the use of standard curve formulae.

Move from A to D on tangent, setting hub on permanent point for this correct P. C. Run the curve for a length equal to that from A to B, this being in the example 760 ft., to point E. Set on point E and turn angle into tangent, obtaining difference between this angle and the total deflection angle, calling the difference d. Then d ÷ D = length to move E ahead, or distance from E to F, the true P. T., the length in the example being 20 ft. The total deflection angle for the curve is equal to the deflection angle to E plus d ÷ 2. In the example d = 24 min. and the total deflection angle = 7 deg. 36 min. + 24 min. ÷ 2 = 7 deg. 48 min. This can be checked with the transit after setting the true P. T.

CONCRETE CONSTRUCTION PLANT ON A SHORT TIME JOB.

When the contract for the concrete foundations of the new Boston & Maine locomotive shops at East Somerville, Mass., was placed with the Aberthaw Construction Co., Boston, Mass., last November, it was stipulated that the work be completed in the shortest possible time. The contractors therefore decided to erect a complete concrete mixing and handling plant, although the entire job contained less than 2,000 yards of concrete.

The resulting costs, as well as the speed obtained, justified the erection of the construction plant, although it was in operation only about five weeks. These costs per yard were:

Labor, mixing and placing	$0.79
Rental of plant	.39
Handling and erecting of plant	.18
Total	$1.36

The arrangement of the construction plant was as follows: A single spur track from the railway was run to the site, approaching it at right angles to the buildings and at about the middle of the group. Some 200 ft. from the building site, and on the right-hand side of the spur track approaching the work, the mixing platform, mixer and elevator were placed. The siding was paralleled by a narrow-gage track on the same side as the mixer. The mixer platform and the narrow-gage track were built about on the level with the body of a freight car. Turnouts on the narrow-gage track were provided on either side of the mixer platform for passage of cars and storage for idle ones. The aggregate could be unloaded to the mixer platform direct from the freight cars or into narrow-gage cars which could be dumped direct into the mixer. The cement shed was about 100 ft. from the mixer, alongside the narrow-gage track and the siding. Cement was unloaded from the freight cars into the cement shed and transferred to the mixing platform by wheelbarrows or narrow-gage cars.

As the tops of the foundations were several feet above ground level, the track for delivering the concrete was raised so that it could be dumped from the narrow-gage cars direct into the forms. The raising of the narrow-gage track brought the dump cars too high for the mixer to discharge into them, so a short elevator tower with an automatic trip bucket was erected. The mixer discharged into this bucket, which was hoisted and dumped into the cars. A portable engine supplied power for the mixer and for a hoist to operate the elevator.

The reinforcing steel and lumber for forms were unloaded on the opposite side of the track from the mixer and nearer the site of the building. The steel was bent and the lumber cut for the forms and carried into place by hand.

A Russian engineer, A. Nikitin, has published a book on the narrow gage railways of Russia. Although the minister of public works, in 1896, proposed the use of about $250,000 of government funds for such railways, his idea was not approved, and private companies gradually developed the system. In 1887, Russia had 635 miles of narrow gage railways, of which about one-fourth were state property. This number increased, in 1906, to 1,400 miles, including the Trans-Caucasian line, 23 miles long, and the Livadian line, 130 miles long.

General News Section.

The Gulf, Colorado & Santa Fe has received 6,500 hardwood ties from Mexico.

The Cincinnati, New Orleans & Texas Pacific has increased the wages of locomotive enginemen about 10 to 12 per cent.

Three hundred and fifty switchmen of the Southern Pacific lines in Texas have had their pay increased three cents an hour, the increase to date from the first of April.

At Philadelphia last week the freight claim agent of the Philadelphia & Reading was arrested on a criminal charge and held in $800 bail for selling some unclaimed eggs which were unfit for food.

Two men arrested at Fairfield, Cal., have confessed to being the robbers who rifled the mail car on a Southern Pacific train at Benicia, Cal., April 17. They say that they secured at that time only $16.

A fire which occurred on the night of July 24 destroyed a number of loaded freight cars, also the Cleveland, Cincinnati, Chicago & St. Louis freight transfer house at Linndale, Ohio. The estimated loss is $200,000.

In the supreme court of the District of Columbia July 21, the Humboldt Steamship Company filed a petition to compel the Interstate Commerce Commission to assume jurisdiction over common carriers in Alaska. In a recent decision, the commission held that it had no authority over carriers in Alaska.

A press despatch from Montreal says that the Canadian Pacific has reached an agreement with its conductors and trainmen, by which the men have gained nearly all of the demands which they presented. The standard rates of pay east of Chicago will be recognized by the Canadian Pacific. The agreement takes effect as of May 1 last.

L. J. Lyons, district attorney, has entered suits in the Federal courts in Missouri against five different railways for violation of the Hours-of-Service law. The roads sued and the penalties demanded in each case are as follows: Missouri Pacific, $22,000; St. Louis & San Francisco, $3,700; Missouri, Kansas & Texas, $13,500; Chicago Great Western, $2,500, and the Kansas City Southern, $400.

At Carbondale, Pa., on Monday night of this week, rioting in connection with the strike of track laborers of the Delaware & Hudson resulted in fatal injury to one man and less serious injuries to a number of others. The roadbed was damaged by dynamite at Avoca, and at a number of places the track was made impassable by the removal of spikes. The despatches say that the strikers number 1,200.

The strike of 12,000 employees of the Northeastern Railway of England, begun on July 18, was suddenly ended on July 21 by the surrender of the strikers. They had been unable to secure recognition and support from the Amalgamated Society of Railway Servants. The press despatches say that the suspension of traffic during the three days of the strike made it necessary for 50,000 men in coal mines, ship yards and other industries to stop work.

The State Forest Commissioner of New York has sued the New York Central and the Delaware & Hudson for heavy penalties and damages due to fires set by locomotives on State forest lands. The fires occurred in 1908; the alleged damage done by the New York Central amounted to $57,000, and the amount of penalties demanded is $1,103,000. On the Delaware & Hudson the damage was $94,000, and the penalties claimed aggregate $1,400,200.

Owing to the great scarcity of laborers the Canadian government has decided to admit from all countries except Asia, railway construction laborers who are mentally, morally and physically fit, willing to work and who are guaranteed employment by contractors. This means that contractors in the prairie provinces and on the Pacific coast will be able to secure large numbers of first-class men who, under the strict interpretation of the immigration regulations, might be disbarred either for lack of the required $25 or for not coming from the country of birth or naturalization.

William Whyte, first vice-president of the Canadian Pacific in charge of the interests of the company at Winnipeg and west of there, quoted in a long article in the *New York Times*, has a very good opinion of the Railway Commission of Canada and of the course of the government in general in railway regulation. The commission has uniformly aimed to give to the people and the corporations a square deal. Any citizen can now get prompt redress for any grievance against the carriers, which is a marked improvement over former conditions. The railways welcome the aid of the commission in settling difficulties between themselves and the public. William Wainwright, fourth vice-president of the Grand Trunk, speaks in a similar vein. His company has been put to heavy expense in carrying out the orders of the commission, but he feels sure that, on the whole, the commission has been of inestimable value to the road. The commission is now entering on its sixth year.

California Railway Men in Politics.

J. F. McCarthy, of San Francisco, an engineman of the Southern Pacific, and L. H. Collett, of Fresno, an engineman of the Atchison, Topeka & Santa Fe, are president and secretary, respectively, of an organization made up of enginemen, conductors, firemen and brakemen which has been formed in California to deal with state legislative matters. The members propose to take a hand in state politics. They propose to see that hysterical legislation, tending to reduce the earning powers of railways and hamper their managements, shall be discouraged. The leaders in this movement are members of the brotherhoods of the classes of employees named, but they say that they have the support of the entire railway labor element of California. They have already held meetings at a number of places and have received marked attention from the politicians of the state.

The Grand Trunk Strike.

The strike of conductors and trainmen on the Grand Trunk continues, and the company is gradually restoring its freight service with new men. The officers of the company and the representatives of the strikers are very brief in their statements. The company says an experienced man is in charge of every train, and, on Monday of this week, it was claimed that freight, except perishable freight, was being received at all stations. At the beginning of the strike, early last week, hardly any freight trains could be run, but now considerable numbers are running on all divisions. Just how much progress has been made in clearing up the blockade it is impossible to determine from the meager reports given out.

The Canadian Minister of Labor, Mr. King, made repeated proposals that the dispute between the road and its employees be submitted to arbitration, the government to defray the expenses, but nothing came of these proposals. In a telegram sent on Sunday, President Hays reminded Mr. King that the road had shown itself favorable to arbitration, but that the time for such action had passed; and that "it is only necessary that we should have protection to which we are entitled to enable us to resume the full operation of the road."

Violence was reported from Brockville, Ont.; South Bend, Ind., and Brattleboro, Vt. On Friday night of last week there was a mob at the station at Brockville and seven men were injured. At South Bend there was rioting on Sunday and considerable disturbances on other days. Air-brake hose were cut in freight trains and employees and policemen were stoned. The Governor of Indiana was requested to furnish troops to help keep the peace; but at last accounts, although the militia were held in readiness, the Governor said that the sheriff could maintain order. The local authorities at South Bend insisted upon the retirement of Pinkerton's men as a condition of taking action to protect the railway. A freight train was derailed at South Bend on Tuesday of this week, but it does not appear

whether or not this was due to malicious tampering with the tracks, though rails had been found loosened in other places.

The shops of the company at Montreal and other places, which were closed when the strike was begun, were re-opened on Tuesday of this week.

The trainmen of the Wabash, who run over the Grand Trunk tracks from Detroit to Niagara Falls, decided on Saturday to return to work.

The Growth of Cities.

In May and June there was an exhibition in Berlin of municipal architecture and engineering, which, in view of the growing concentration of population in large towns, are arts of tremendous and pressing significance. The exhibition was rich in statistical diagrams, one of the most significant of which showed that while in 1895 the German Empire had 28 great towns with an aggregate of 7,300,000 inhabitants, forming 14 per cent. of the population of the empire; in 1910 it has 45 such towns, with an aggregate of 13,400,000 inhabitants, forming 21 per cent. of the population of the empire—a growing concentration of population parallel to that in this country, as the census of this year will show.

Of course, such a growth of city population has been made possible only by the construction and working of city and suburban railroads, the plans and performances of which formed a large part of the exhibition, including the great model of the Berlin City & Belt Railway, which was shown in Chicago in 1893.

The statistical diagrams exhibited show some facts which ought to convince us that Chicago and Seattle are not the only places that have had a marvelous growth. The city of Berlin is shown to have received 18,530,000 tons of freight in 1908, and to have shipped 3,720,000; and of the freight received no less than 42 per cent. came by water, though Berlin is on an insignificant stream, which, however, is navigable for barges bringing English coal, lumber, etc., from the Baltic, and Siberian coal, etc., from the South. From 1895 to 1906 the freight business of Berlin increased from 10,700,000 to 21,700,000 tons.

The City & Belt Railroad (elevated), which had 75,500,000 passengers in 1875, carried 149,100,000 in 1908. It has but a small part of the city traffic.

Steel in Freight Car Construction.

The article on Steel in Freight Car Construction, by C. A. Seley, mechanical engineer of the Rock Island Lines, which appeared in the *Railway Age Gazette* of July 8, 1910, page 84, should have been accompanied by the statement that the paper had been presented before the Franklin Institute of Philadelphia, and was published in the proceedings of that society.

The Mount Ari Railway.

The Mount Ari Railway was built to carry timber from the Mount Ari Forest. This is perhaps the most expensive road ever constructed in Japan. The Mount Ari forest is located in the unpopulated region 40 miles east of the city of Kagi, Formosa. The wealth of this forest was discovered in 1899 by the Japanese government. It covers over 50,000 acres. The fertile soil, abundant rainfall and steady climate contribute to the growth of the trees. Added to this, no storm of any damaging force visits this region, making it an ideal timber forest. There grow Chinese oak and several other kinds of trees at the elevation of about 4,000 ft. above sea level, red cypress trees which are called the "Formosa cypress trees" at 6,000 ft. and oak at 7,000 ft. An estimate of the amount of timber available in linear feet is as follows:

Name.	Diam. less than 3 ft.	Diam. 3 to 6 ft.	Diam. 6 to 9 ft.	Diam. greater than 9 ft.
Red cypress	1,977,000	1,433,000	677,000	238,000
Chinese oak	1,087,000	2,106,000	270,000	70,000
Pine	2,675,000	4,872,000	987,000	6,000
Red oak	2,913,000	693,000	2,000	....
Beech	1,955,000	848,000	1,000	....
Miscellaneous	10,673,000	3,372,000	49,000	304,000

The red cypress is lighter than Chinese oak, and it is especially fit for furniture and wheel material.

After the discovery of the resources of this forest, the Formosa government decided to appropriate the timber for its own railway supply. The transportation of the timber was first carried on by floating down stream, but later this method was abandoned on account of insurmountable difficulties due to the necessary improvement of the So-bun-kai river for the above purpose. In 1905 the Formosa government decided to construct a railway, which decision was a result of the report submitted by an eminent forester, Dr. Kawae, after a minute investigation in person.

The construction of the railway in this region was by no means an easy task. Even for the locating survey the men were confronted with inexplicable difficulties, because the topographical features of this region are extremely craggy. The construction work, which was commenced in 1907, was recently completed, after several lives had been sacrificed.

The length of the entire road is 41 miles. The maximum curvature is 38 deg. and the maximum grade is 21 per cent. The track construction is as follows: Sand and crushed stones are used for the roadbed, 11 ft. wide on 1:1½ slope embankment, and 17 ft. wide in rock cuts of 1:½ slope.

The bridges are constructed with maximum load of one ton per lineal foot. Timber was preferred for bridges, because they can be reconstructed with the product of the Mount Ari forest at greater ease and less expense, and also the initial cost is reduced.

Tunnels are 9 ft. 6 in. in width and 13 ft. in height. There are no supports used on the part of hard rocks, but 6 in. x 9 in. beams and columns and 2 in. or 3 in. boards are used for the part of soft rocks as the supports. Oak ties, 5 ft. x 6 in. x 4 in., are used with spacing of 2 ft. 4½ in between ties. At present 30-lb. steel rails are used.

Engines weigh 12 to 20 tons, and 6 ft. x 15 ft. freight cars with 4 wheels and 6 ft. x 20 ft. box cars with capacity of 5 to 10 tons each will be used. The train will run three or four trips a day with its traffic capacity of 60 tons per train at the speed of 10 miles per hour. The present estimate of total transporting capacity of this road is about 70,000 tons per year.

Seven stations are located between the terminals of Kagi and Mount Ari Forest as water supply and freight stations. The total cost of the construction of this road is $2,000,000, that for one mile amounting to $47,000.

We are indebted for the above details to T. Kitagawa, University of Wisconsin.

How to Get Public Documents.

The Government Printing office advises that in the fiscal year ended June 30 more than half a million public documents were purchased by people from every part of this country, and by some in foreign lands. Over $87,000 was received for these publications, a proof that public documents have become a commodity that thousands of readers are willing to pay for. At the same time the numerous inquiries addressed to various officers indicate that, generally speaking, the public has only a hazy idea as to how public documents can be obtained and how their prices may be learned. Any inquiry regarding public documents that may be addressed to the Superintendent of Documents, Government Printing Office, Washington, will meet with prompt atten-

State Regulation.

There is more "water" in the stock of the average American farm to-day than there is in the stock of the average American railway. Take a highly cultivated Illinois farm, and there are thousands of them worth all the way from $150 to $200 per acre. Does any man claim that the value is represented by the original cost of the land, plus the labor and improvements that the owner has put upon it? A great percentage of that value comes from its proximity to good market towns, from the railroad that crosses it, the interurban road, the telephone and the rural free delivery. Chicago has 24 railways. Only six have depots of their own. The rest enter through leases and trackage rights. The original roads secured their entry into the city for next to nothing. Many of those $200 per acre farms cost $1.25 per acre. . . . Anyone who believes that railway securities are a source of untold wealth to those who hold them can secure all of them that he may desire at reasonable rates. Not all the restrictive legislation is in the west. Within the last year a transportation company in the east desired to issue an additional series of bonds. Before they could do this they had to obtain the consent of the state commissioners. Before they obtained that consent they had to bind themselves to expend the money for certain prescribed improvements, and had to further bind them-

selves to put the bonds on the market at a price fixed by the commission. That happened to the Boston Elevated Railroad Company, in Massachusetts. . . . Now what is to be the ultimate benefit of this eternal nagging of the common carriers? In Illinois they are making us run on a narrow embankment with a two-cent passenger rate on one side of us and a $20,000,000 waterway on the other, for the ostensible purpose of reducing or "regulating" the freight rates. For much of the general misunderstanding as to the real position of the railways, the roads themselves are to blame. The most successful regulator, as well as the most reasonable one, is more publicity.—*Walter L. Ross, Vice-President, Chicago & Alton.*

Estimating Timber Lands.

The Department of Agriculture is estimating the present stand of saw timber on each township and section of national forest land in Arizona, New Mexico, Arkansas and Florida. It will probably take until the close of 1912 to complete the work.

Up to the present time in Arizona all the saw timber on the Coconino Forest has been cruised, including the Grand Canyon division, all on the Prescott, more than half of the Sitgreaves, about one-fifth of the Apache; in New Mexico, the Gallinas division of the Lincoln, and half of the Pecos. Field parties are now at work in Arkansas on the Arkansas National forest, and in Florida on the Choctawhatchee. During the present field season it is anticipated that the estimates covering the Apache, the Gila and the Pecos, in New Mexico, and the Mount Graham division of the Crook, in Arizona, can be completed, and that for the Manzano, in New Mexico, which was estimated in 1908, thoroughly revised. During the winter of 1910 and 1911 the Cochtawhatchee and the Ocala, in Florida, and the Arkansas and the Ozark, in Arkansas, can be finished. Thus it is likely that by 1913 all saw timber in District 3, comprising the forests of the South and the Southwest, will be cruised and mapped so that purchasers can negotiate sales promptly and the government will know just what timber should be sold first and of how much it can safely dispose.

New Haven Stockholders.

Some of the largest stockholders in the New York, New Haven & Hartford are: New England Navigation Company, 172,946 shares; Mutual Life Insurance Company, 35,640; Pennsylvania Railroad, 34,900; Adams Express Company, 34,730; American Express Company, 23,493; New York Central, 11,248; C. Pratt & Co., 10,563; A. G. Vanderbilt, treasurer, 6,195; W. W. Astor, 5,051; M. F. Plant, 4,000; J. J. Astor, 4,112; Lewis Cass Ledyard, director, 20,542; C. M. Pratt, director, 6,690; J. P. Morgan, director, 4,377; C. S. Mellen, director, 3,580, and William Rockefeller, 1,600. The New England Navigation Company is a subsidiary of the New Haven and the shares owned by it may properly be considered as treasury stock of the New Haven.

The Bureau of Railway Economics.

The Bureau of Railway Economics, briefly noticed in these columns last week, which is to "disseminate correct knowledge in regard to freight rates and other questions in which the railways and the public are jointly interested," has been put in charge of Logan G. McPherson. The office of the bureau is to be in the Munsey building at Washington. Mr. McPherson has been a frequent contributor to the *Railway Age Gazette*, and is the author of two valuable works on transportation, "The Working of the Railroads" and of "Railroad Freight Rates in Relation to the Industry and Commerce of the United States." Before becoming interested specifically in railway economic matters, Mr. McPherson was a newspaper man, and it was while doing newspaper work that he first became interested in railway economics. Being a journalist he has peculiar qualifications for presenting that aspect of the railway question which will be best understood by the general public. That there is here a fine opportunity for doing good and for bringing the railways and the public together on an issue in which their interests are almost identical goes without saying. The fundamental misunderstanding of railway matters by the general public has so often been commented on that nothing further need be said about it. But there is another object which should be served by this bureau; the enlightening of the railways themselves. Usually when the railways find it necessary or desirable to go to the public with a proposition which they must justify, it is necessary first to make a study of various alternative propositions that may be adopted, and then select that one which allows of the most full and fair justification.

The Guayaquil & Quito.

The Guayaquil & Quito runs from Duran, Equador, on the Guayas river, opposite the port of Guayaquil, to Quito, the capital, connection between Guayaquil and Duran being made by steam ferryboats. The distance between Duran and Quito is 287.5 miles. It is owned and operated by Archer Harman, of New York, and associates. The officials of the company in Ecuador are all Americans, as also are the conductors and engineers and executive clerks. The firemen, brakemen, telegraph operators, station agents, laborers, etc., are natives or negroes.

Starting at sea level, at Duran, at one point along the line attains a height of 11,841 ft. above the sea. This is at Urbina. The maximum grade is 5.5 per cent. and the maximum curvature 29 deg. The gage is 3 ft. 6 in. and the rails used are 55 lb.

There are 45 stations, 27 of which are telegraph offices. The executive offices are at Ambato, 196 miles from Duran, and 8,500 ft. above sea level. The floating equipment consists of one river steamer, one tugboat, four wooden lighters and four steel lighters. As the ocean liners do not come right up to port but anchor three miles down the river, transfer of company's material must be made by lighter or tug. The company owns 26 locomotives, with 22-in. stroke, 42-in. driving wheels, steel fireboxes, heating surface of firebox 100 sq. ft., and a total tractive power of 31,250 lbs. Fuel used is coal, and all engines are equipped with Westinghouse air brakes and the Le Chatelier water brake. The passenger equipment consists of five first class coaches, three second class coaches, six baggage and express cars and two chair cars. The coaches are made of pine, with a length over the buffers of 40 ft., breadth of 8 ft. 4 in. and height inside of 8 ft. 3 in. They are nearly all constructed in the company's shops at Duran, equipped with Westinghouse air brake, water brake and hand brakes. They are lighted by kerosene lamps, no heating being required.

The freight equipment consists of 46 freight box cars, capacity 30,000 lbs.; 40 coal cars, 30 flat cars, 35 stock cars, one pay car, one tool car, four dump cars, one derrick car, one weed killer and one steam shovel. They are all equipped with air and hand brakes.

The shops at Duran have a total area of about 7,500 sq. ft. About 2,500 locomotives and cars are annually repaired in these shops. They contain 12 lathes, five saws, one overhead crane, eight blacksmith forges, one 5-ton hammer, and much other smaller machinery. About 200 men are regularly employed.

The officials are: Archer Harman, president, New York; E. H. Norton, vice-president, New York; F. B. Stewart, vice-president, Ambato; H. W. Henderson, general manager, Huigra; M. K. Jones, superintendent of transportation, Huigra; A. A. Bond, engineer of maintenance of way, Huigra; W. H. Morse, superintendent of motive power, Duran; J. R. Stewart, auditor, Ambato, and A. N. Paget, treasurer, Ambato.

Estimate of 1910 Earnings and Expenses.

Data now at hand indicate that the total gross earnings of the railways of the United States reporting to the Interstate Commerce Commission amounted, in the year ended June 30, last, to approximately $2,845,000,000, an increase of $350,000,000 or more. The ratio of increase in earnings will be shown by the official figures, when they are issued some time in the fall, to have been very close to that indicated here, which is 14 per cent.

These gross earnings are based on the operations of an average mileage of 236,500 miles, or 3,500 miles more than the average reported by the commission for the fiscal year 1909. The mileage figures, however, are more difficult to estimate than the aggregate earnings, for the reason that the mileage included in the monthly aggregate statements of the commission vary in such fashion as, for instance, 237,189 miles for last December and 235,924 miles for March, three months later. The average

for the nine months for which the commission's monthly statements are available is 236,338.

Year before last the average operated mileage increased nearly 5,000 miles, in comparison with which the mileage added to operation the past 12 months will look small, whatever the exact figures turn out to be. Unquestionably the effects may be traced here of the comparative scarcity of railway capital for extension purposes during several years past.

Estimated mileage and gross earnings for the fiscal year are compared with the official figures for 1909 in the following tables, gross earnings including earnings from "outside operations," but not, of course, income from investments or other sources other than operation:

	Miles operated, average.	Gross earnings.
1910	236,500	$2,845,000,000
1909	233,000	2,494,115,500
Increase	3,500	350,884,500
Increase, per cent.	1.5	14.0

Calculations of operating expenses and net earnings are subject to more reservation than gross earnings, on account of the extraordinary effect upon expenses of the wage adjustments of the final three months. Few railway companies have published their statements for June and not all those for May. For other reasons, also, such as the unusually severe winter, net earnings have fluctuated extremely during the year. Thus the year opened with an increase of 15 per cent. in net, comparing rationally with the expansion in the volume of business done. November brought a gain in aggregate net earnings of no less than 25 per cent., but December saw an actual decrease, despite the increased mileage reporting. In the three succeeding months, net earnings again rose, but not at anything like their old rate, while in April the rate of gain dropped off sharply and thereafter decreases of 2 to 5 per cent. prevailed.

In the following comparison of estimated expenses and net earnings with the official figures of 1909, outside operations are included in expenses and net. Taxes are not included in expenses, but are shown separately:

	Operating expenses.	Net earnings.	Taxes.
1910	$1,918,350,000	$926,650,000	$98,000,000
1909	1,662,102,000	832,013,400	89,026,200
Increase	$256,248,000	$94,636,600	$8,973,800
Increase, per cent.	15.4	11.3	10.0

—*Wall Street Journal.*

Proposed Tunnel Under New York Bay.

Stephen M. Hoye, president of the New Jersey & Staten Island Junction Railroad Company, announces that plans are being prepared for a tunnel across the narrows of New York bay, between Staten Island and Long Island. Mr. Hoye says that the tunnel can be made in a year at a cost of $6,000,000, and he is thinking of having a road wide enough for both railway tracks and carriages. The length of such a tunnel would be about two miles.

The Land of Evangeline Route.

With the announcement that the Canadian Pacific has obtained control of the Dominion Atlantic, the *Railway News* of Toronto prints the following: The Dominion Atlantic Railway is the best local system in the Dominion and has enjoyed the best and most progressive management, indeed it more resembles a trunk line than a system of railway confined to one province; whilst its regularly operated water lines extend to St. John, N. B., and Boston, Mass., carried on by veritable types of ocean liners which perform their schedules year in and year out, summer and winter, with the regularity of express trains. * * * In 1880 there were only 24,000 barrels of apples exported to the English markets from the "Valley"; in the season of 1909-1910 nearly 800,000 barrels were sent across the ocean, these figures being an advance of 100,000 over the previous season. As enormous numbers of young orchards come into bearing each year it makes the yearly ratio of increase in output very marked, and this increase will continue as yearly large additional tracts are broken and fruit trees planted.

During these years of development the present Dominion Atlantic has been gradually formed. Starting with the Windsor & Annapolis, operating 87 miles of road, within the period from 1892 to 1897, the Cornwallis Valley Railway and Western Counties Railways were purchased when the present name was assumed. In 1895 the St. John-Digby Steamship Service was inaugurated, followed in 1897 by ships on the Yarmouth-Boston route. Since then the Yarmouth Steamship Company and Midland Railway properties were acquired. * * * The company now operates 297 miles of rail lines and 529 miles of water lines. * * *

The Dominion Atlantic Company's fleet now consists of the following ships: Prince Arthur, Prince George, Prince Rupert, Prince Albert, Boston and Yarmouth. These craft include models of the latest development in marine architecture; they are efficiently manned and maintained with the same scrupulous care and cleanliness that prevails in the Royal Navy. The Prince George and Prince Arthur are fitted with torpedo boat types of engines and hold records exceeding 22 knots per hour; connecting with these ships in addition to the regular service from Yarmouth to Halifax are the special limited through trains. "The Flying Bluenose," made up of day coaches and chair cars, making the run between Yarmouth and Halifax, 217 miles, with only nine stops. Eight round trips are made weekly between Boston and Nova Scotia throughout the summer by the steamship lines of this company. It is estimated that between 80,000 and 100,000 passengers will use these water lines to and from Boston during the next 12 months.

Statistics of Railways for 1909.

Owing to a typographical error, the table taken from returns to the Interstate Commerce Commission showing statistics of railways for 1909 and previous years, which was printed in last week's issue of the *Railway Age Gazette*, was not entirely correct. We print herewith a correct table. The apparent error in 1908 and 1909 in the increase in mileage during the 12 months is caused by the fact that the commission in these two years did not include in its report the mileage of switching roads. The increases shown, therefore, are the actual increases in mileage comparing like with like, while the figures for the miles of road completed are not like figures in 1909, 1908 and 1907.

Statistics of Railway in 1909 and Previous Years.

	1909.	1908.	1907.	1906.
Miles of road completed	236,869	233,678	229,951	224,363
Increase, 12 months	3,215	5,930	5,588	6,262
*In hands of receivers	.....	.....	3,926	3,971
Locomotives, number	57,212	57,698	55,388	51,672
Cars owned, passenger	45,584	45,292	43,973	42,262
Cars owned, freight	2,073,606	2,100,784	1,991,557	1,837,914
Cars owned, total	2,218,280	2,244,357	2,126,594	1,958,912
Employees	1,502,823	1,458,244	1,672,074	1,521,355
Per 100 miles of road	638	623	735	689
Total stock and funded debt.†	$13,711.9	$12,840.1	.....	$14,570.4
Stock and debt per mile road	59,259	57,230.0	.....	67,936.0
Gross earnings, millions	2,418.7	2,393.8	2,589.1	2,325.8
Average per mile	10,381	10,533.0	11,383.0	10,460.0
Passengers carried, millions	891.5	890.0	873.9	800.0
Carried 1 mile, millions	29,109.3	29,082.8	27,718.6	25,175.0
Tons freight carried, millions	1,556.6	1,533.0	1,706.3	1,631.4
Carried 1 mile, millions	218,803.0	218,381.5	236,601.4	215,877.6
Average rate per ton-mile, mills.	7.6	7.5	7.6	7.5
Average passenger fare per mile, cents	1.9	2.0	2.0	2.0

*Not reported in the present abstract.
†In millions. This represents only securities outstanding in the hands of the public.

Record Discipline on the Lehigh Valley.

"Record Suspensions" having been found to be as efficient as actual suspensions, it being a matter of personal pride with the men to have a clear record, it has been decided by the Lehigh Valley to revise further its system of discipline so that, beginning July 1, 1910, employees with imperfect records will have an opportunity to clear them by loyal and efficient service in the future. Clear records for stated periods will be recognized by credit allowances, and heroic or meritorious service, whether in or out of the usual line of duty of the employee, will be rewarded by further credit allowances. Employees having a clear record for two years prior to July 1, 1910, will be entitled to cancellation of all demerits prior to that date. A clear record for one year prior to July 1, 1910, will cancel all demerit records prior to January 1, 1905, and a clear record for twelve consecutive months at any time after July 1, 1910, will cancel demerit records to that date.

Employees not having a clear record for one year prior to July 1, 1910, will retain their records as entered upon the books, but a clear record for twelve consecutive months at any time

after this notice becomes effective will cancel their demerit record prior to January 1, 1905, and a clear record for two periods of twelve consecutive months each will cancel all demerit records to July 1, 1910.

Employees who entered the service since January 1, 1905, will be enabled by a clear record for twelve consecutive months prior to July 1, 1910, to cancel all demerit records to that date. Such employees not having a clear record for twelve consecutive months prior to July 1, 1910, will be enabled by a clear record for twelve consecutive months at any time after July 1, 1910, to cancel demerit records to that date.

Thus to every employee is given an opportunity to clear his past record.

Clear records will entitle employees to credit records to apply against demerit records (i. e., "record suspensions") accruing after July 1, 1910, as follows:

(a) Ten days will be cancelled by a clear record of six months.

(b) Thirty days will be cancelled by a clear record for twelve months.

(c) Sixty days will be cancelled by a clear record for eighteen months.

The minimum merit or demerit record will be five days and the maximum sixty days. When an employee's demerit record aggregates ninety days he will be relieved from duty.

Bureau of Mines.

The Bureau of Mines, of the Department of the Interior, which has just been established, in accordance with the law of May 16 last, will devote itself first and principally to the investigation of mine accidents, a work which has heretofore been carried on under the Geological Survey. For this purpose and for the investigation of fuels, Congress appropriated $410,000, and the total appropriation for the Bureau is $502,200. In general, the Bureau will continue the work of the Technologic Branch of the Geological Survey, and the work will be done largely by the same men heretofore engaged in the work. Many of the problems before the Bureau will have to wait, however, until Congress makes further appropriations. The director of the Bureau is George O. Smith. Bulletins on analyses of coal and other subjects will be issued by the Bureau before long. The director's office is at Washington, but the Bureau includes the testing station at Pittsburg, and rescue stations will be established at a number of points in the coal regions.

International Congress of Refrigeration.

The second International Congress of Refrigeration will be held at Vienna, Austria, October 6-11, 1910. The subjects under the head of railway and steamship refrigeration are: System of refrigerating cars in present use upon the different railway lines of Europe and America; necessity for a uniform regulation so as to facilitate the circulation of these special cars; practical means for the passage of refrigerating cars at the frontier where the railway lines are interrupted on account of the difference in tracks; services that cargo boats might render in the matter of refrigerated shipments; special arrangements in the holds of vessels for refrigerated shipments; facility of connection between refrigerated transportation by land and that by sea. E. O. McCormick, vice-president of the Southern Pacific, San Francisco, Cal., is chairman of the commission on railway and steamship refrigeration of the American Association of Refrigeration, which is affiliated with the international association. J. F. Nickerson, *Ice and Refrigeration*, Chicago, is secretary of the American association.

Imperial Russian Technical Society.

The International Exhibition of Electricity, applied to railways, which was to be held at St. Petersburg, Russia, in August, 1910, has been postponed to April 15, 1911, in order to adapt it to the 75th anniversary of the Russian railways. The program of the exhibition and the rules for the exhibitors remain unaltered. New terms have been fixed as follows: Inquiries will be accepted until February 15, 1911, and exhibits accepted from March 15 until April 10. The exhibition opens April 15 and closes July 15.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass.
AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Scranton, Pa.; next meeting June 22, 1911; Niagara Falls, N. Y.
AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—C. M. Burt, Boston, Mass.; next meeting, St. Paul, Minn.
AMERICAN ASSOC. OF LOCAL FREIGHT AGENTS' ASS'N.—G. W. Dennison, Penna. Co., Toledo, Ohio.
AMERICAN ASS'N OF RAILROAD SUPERINTENDENTS.—O. G. Fetter, Carew Bldg., Cincinnati, Ohio.
AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 24 Park Place, New York.
AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago; Oct. 18; Fort Worth, Tex.
AMERICAN RAILWAY ENGINEERING AND MAINT. OF WAY ASS'N.—E. H. Fritch, Monadnock Bldg., Chicago.
AMERICAN RAILWAY INDUSTRIAL ASSOCIATION.—G. L. Stewart, St. L. S. W. Ry., St. Louis.
AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony Building, Chicago.
AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—O. T. Harroun, Bloomington, Ill.
AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. Edgar Marburg, Univ. of Pa., Philadelphia.
AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., N. Y.; 1st and 3d Wed., except July and August; New York.
AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 29th St., N. Y.; 2d Tues.; New York.
AMERICAN STREET AND INTERURBAN RAILWAY ASS'N.—H. C. Donecker, 29 W. 39th St., New York; Oct. 10-14; Atlantic City.
ASSOCIATION OF AM. RY. ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago.
ASSOCIATION OF RAILWAY CLAIM AGENTS.—E. H. Hemus, A., T. & S. F., Topeka, Kan.
ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 135 Adams St., Chicago; June 19, 1911; Boston.
ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 24 Park Place, New York.
BUFFALO TRANSPORTATION CLUB.—J. N. Sells, Buffalo.
CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 1st Tues. in month, except June, July and Aug.; Montreal.
CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, Montreal, Que.; Thursdays; Montreal.
CAR FOREMAN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month; Chicago.
CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Friday in January, March, May, Sept. and Nov.; Buffalo.
ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.
ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, 803 Fulton Building, Pittsburgh; 1st and 3d Tuesday; Pittsburgh.
FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Rich., Fred. & Pot. R.R., Richmond, Va.
GENERAL SUPERINTENDENTS' ASS'N OF CHICAGO.—H. D. Judson, 209 Adams St., Chicago; Wednesday preceding 3d Thursday; Chicago.
INTERNATIONAL MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.
INTERNATIONAL RAILWAY FUEL ASSOCIATION.—D. B. Sebastian, La Salle St. Station, Chicago.
INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—L. H. Bryan, D. & I. R. Ry., Two Harbors, Minn.
INTERNATIONAL RAILWAY MASTER BLACKSMITHS' ASS'N.—A. L. Woodworth, Lima, Ohio; Aug. 16-18; Detroit, Mich.
INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, rue de Louvain, 11 Brussels.
IOWA RAILWAY CLUB.—W. B. Harrison, Union Station, Des Moines, Ia.; 2d Friday in month, except July and August; Des Moines.
MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony Bldg., Chicago.
NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month, ex. June, July, Aug. and Sept.; Boston.
NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August; New York.
NORTH-WEST RAILWAY CLUB.—T. W. Flanagan, Soo Line, Minn.; 1st Tues. after 2d. Mon., ex. June, July, August; St. Paul and Minn.
NORTHERN RAILWAY CLUB.—C. L. Kennedy, C., M. & St. P., Duluth; 4th Saturday; Duluth, Minn.
OMAHA RAILWAY CLUB.—A. H. Christiansen, Barker Blk.; 2d Wed.
RAILWAY CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City; 3d Friday in month; Kansas City.
RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, Pittsburgh, Pa., 4th Friday in month, except June, July and August; Pittsburgh.
RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, 12 North Linden St., Bethlehem, Pa.; annual, Oct. 11; Richmond, Va.
RAILWAY S'KEEPERS' ASS'N.—J. P. Murphy, Box C., Collinwood, O.
RICHMOND RAILROAD CLUB.—F. O. Robinson; 2d Monday; Richmond.
ROADMASTERS' AND MAINTENANCE OF WAY ASS'N.—Walter E. Emery, P. & P. U. Ry., Peoria, Ill.; annual, Sept. 13-16; Chicago.
ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug.; St. Louis.
SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St. Station, Chicago; Oct. 25 and 26; Hotel Chamberlin, Old Point Comfort, Va.
SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. R. Ry., Montgomery, Ala.; annual, Oct. 20; Atlanta.
SOUTHERN & SOUTHWESTERN R.R. CLUB.—A. J. Merrill, Prudential Bldg., Atlanta; 3d Thurs., Jan., Mar., July, Sept. and Nov.; Atlanta.
TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August; New York.
TRAIN DESPATCHERS' ASS'N OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago.
TRANSPORTATION CLUB OF TOLEDO.—L. G. Macomber, Woolsen Spice Co., Toledo.
TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo; annual meeting; Aug. 16-19; Niagara Falls, Ont.
WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg; 2d Monday, except June, July and August; Winnipeg.
WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, Monadnock Bldg., Chicago; Wednesdays, except July and August; Chicago.

Traffic News.

The Wabash Railroad lately took from Detroit to the Missouri river a train of 61 freight cars all loaded with automobiles.

The Western Pacific is now receiving large numbers of new passenger cars and it is expected that the line will be opened for through passenger traffic on August 22.

The traffic departments of the Union and Southern Pacific roads contemplate charging for tickets good in sleeping cars a rate somewhat higher than that for ordinary tickets, probably an addition of a half a cent a mile.

Rates on coffee in carloads to Chicago and other western cities from the Atlantic coast and from Gulf ports were the subject of a conference last week at White Sulphur Springs, W. Va., but, it is stated, without result. Another conference is to be held in Chicago August 4.

The roads in the Western Trunk Line Committee, after a conference with Chairman Knapp at Washington, have followed the Eastern Lines in agreeing to postpone from August 1 to November 1 the date for the application of their proposed increased freight rates.

The Western Pacific has taken its first long fruit train from Sacramento to Salt Lake City and it is said that the time of all previous runs between those cities was beaten. What this time was is not stated, but the train reached Denver nine hours ahead of the scheduled time.

Over 2,000 bales of cotton were received in New York last week from Fall River, Mass.—which might be likened to carrying coals to Newcastle. Many Fall River mills are now idle, owing to slack demand for cloth, while the price of cotton in New York has been very high.

The Interstate Commerce Commission will give a hearing in New York City August 15 on the question of approving the proposed advances in freight rates in Official Classification territory. A hearing on the same subject will be held at Boston August 16, and at Chicago August 22.

Knight & McDougall, grain dealers, have sued the Delaware & Hudson for $257,499, the value of bills of lading held by the plaintiff for which the railroad could not produce the freight. It seems that the grain had been delivered to parties not entitled to it. This suit is based on the irregularities for which arrests were recently made at Albany.

The city of Trenton is to issue $50,000 in bonds for improving the water front of the city. This improvement looks to the future deepening of the Delaware river, so that there shall be a 12-ft. channel from Philadelphia to Trenton. At present Trenton can hardly be classed as a "port," though it is only about 30 miles from deep water at Philadelphia.

The Philadelphia Rapid Transit Co., which already does a considerable traffic in merchandise, has established a freight station at Front and Market streets, Philadelphia, in a building which cost $30,000, and will increase the freight service to Doylestown and intermediate stations. Four cars are now in use and 20 new cars have been ordered. These cars are 32 ft. long and 6½ ft. wide.

The railway commission of Texas has given out a statement showing that the freight earnings of Texas railways for the 11 months ended May 30, 1910, amounted to $59,804,435, an increase over the previous year of $1,783,806. Passenger train earnings amounted to $25,799,553, an increase of $1,781,651. Gross earnings in the 11 months amounted to $87,116,680, an increase of $3,742,400, and operating expenses amounted to $66,294,028, an increase of $3,997,442. This left net revenue of $20,882,651, a decrease from the previous year of $225,042.

Through the courtesy of one of its members, Charles B. Hopper, general freight agent, the members of The Traffic Club were the guests of the Goodrich Transit Co. aboard the new steamship Alabama on Wednesday afternoon, July 27. This ship has just been put in commission and will ply between Chicago, Grand Haven and Muskegon. The trip on the 27th was a stag party and was in the nature of a christening, with the usual water on the *side*. A buffet luncheon was served aboard the Alabama as it left the wharf at the foot of Michigan avenue at 2 o'clock. The occasion was thoroughly enjoyed by the large number who attended. This is the second outing of the season, the first one being held at the Beverly Country Club, June 23, at which 160 members were present.

The business of delivering tickets to prospective passengers at their residences or hotels, which seems to be growing rapidly in the larger cities, has become of so much consequence on the New York Central in New York City that uniformed messengers are employed in the service. According to an officer of the road, the "Chicago commuters" are particularly pleased with this accommodation. A Chicago commuter is a person who goes to Chicago once a week or oftener. Having their tickets and checks arranged for by their secretaries before leaving their home or office, these passengers can pass through the station and enter the train just like an ordinary commuter; that is to say, their minds may be devoted wholly to introspection, their feet finding the proper platform gate without conscious mental guidance.

The Interstate Commerce Commission will on August 1 begin an examination of the books of the transcontinental lines in connection with the Rocky Mountain rate cases recently decided by the commission. In these cases, it will be recalled, the commission found that the rates charged by the carriers were unreasonable and ordered a reduction of about 20 per cent. The cases included the well-known Spokane rate case, the Portland-Seattle, the Salt Lake City, the Reno and other cases. The commission decided to proceed with caution, and before making a final order to make a comparison. John H. Marble, chief of the division of prosecution; J. M. Jones, chief of the tariff division, and Charles A. Lutz, chief examiner, acting for the commission, and having conferred with the roads, will base the comparison on the business of October, 1909, and January, April and July, 1910. Forty accountants will go over the revenues of the railways in these months, and will compare them with the revenues that would have been earned if the reduced rates as now ordered by the commission had been in effect. Checking will be carried on in San Francisco, St. Paul, Salt Lake City, Denver, Omaha, Spokane, Los Angeles, El Paso, Tucson, Prescott, Portland and Seattle. It is estimated that the entire force of 40 men will take four months to do the work. When the comparative figures are finally presented to the commission it will decide whether the orders making the reductions are to become operative or whether the results demand their revocation or modification.

INTERSTATE COMMERCE COMMISSION.

The Interstate Commerce Commission has ordered that all tariff publications, classifications or supplements thereto filed with the commission on or after September 1, 1910, must indicate by the use of black face type [bold face type], or by the use of symbols with proper footnote explanations, all changes in rates, which are increases over rates formerly in effect, and all changes in rules, regulations or classification ratings, whereby any rate or charge may be increased.

The Interstate Commerce Commission has ordered that when the commission, under authority of Section 15 of the act to regulate commerce, as amended, suspends a tariff publication, classification or supplement thereto, each and every carrier shall, by itself or agent, on receipt of lawful notice of such suspension, immediately post at its stations and file with the commission, on one day's notice, supplement stating that such tariff publications, classifications or supplements thereto are under suspension, and that the rates therein contained will not be applied or charged until further notice, or until such specified dates as the suspension order of the commission may name. Such supplement must bear on its title page the following notation: In compliance with special order No. 6 of the Interstate Commerce Commission of July 13, 1910.

Brooklyn Lighterage Rules Found Reasonable.

M. Mosson Co. v. Pennsylvania Railroad. Opinion by Commissioner Clark.

The complainant, a dealer in lumber at Brooklyn, N. Y., claims that the lighterage rules of the Pennsylvania, as applied to Wallabout basin, are unreasonable, but the commission does not find this to be the case. (19 I. C. C., 30.)

Misunderstanding Between Complainant and Defendant.

Edward G. Davies v. Illinois Central. Opinion by Commissioner Clark.

The hearing of this case showed that the circumstances in connection with the shipment in question were unusual and not previously correctly understood by either complainant or defendant; therefore, no order was entered. (19 I. C. C., 3.)

Rates on Bananas Reasonable.

Waco Freight Bureau et al. v. Houston & Texas Central et al. Opinion by Commissioner Cockrell.

The reasoning in Payne v. M. L. & T. R. R. & S. S., 15 I. C. C., 185, is followed and import rates from New Orleans to Texas common points are not held to apply to bananas. The commodity rate of 72 cents now in effect on bananas is not found unreasonable. (19 I. C. C., 22.)

Tap-Line Allowances.

Industrial Lumber Co. v. St. Louis, Watkins & Gulf et al. Opinion by Commissioner Clark.

The complaint is of unjust discrimination in rates on lumber from Oakdale, La., to Port Arthur, Tex. The complaint is dismissed without prejudice awaiting completion of plans now under way to carry into effect the views expressed in Star Grain & Lumber case, 17 I. C. C., 338. The commission will not attempt to equalize discriminatory conditions created by tap-line allowances by reducing the rate complained of. (19 I. C. C., 50.)

Rates on Lemons Reduced.

Arlington Heights Fruit Exchange et al. v. Southern Pacific et al. Opinion by Commissioner Prouty.

Under the conditions shown by the record in this case the commission fails to find that the present rate on oranges from points in southern California to the East is unreasonable. Present rate on lemons from points in southern California to the East is unreasonable to the extent that it exceeds $1 per 100 lbs.

The commission is investigating the refrigeration and precooling charges on citrus fruit shipments from California, and all questions relating to those issues are reserved for further consideration and future disposition. If in any case the advanced rate on lemons complained of herein has been paid, reparation will be awarded on the basis of the $1 rate upon proper proceedings. (19 I. C. C., 148.)

Satisfactory Through Route Now in Existence.

Southern California Sugar Co. v. San Pedro, Los Angeles & Salt Lake et al. Opinion by Commissioner Lane.

The commission can only be asked to establish through routes and joint rates when the transportation point at which the complainant is located is not reasonably served by a through route now existing. In this case the complainant asks for a through route and joint rate on sugar from New Delhi, Cal., to Missouri river points via the Pacific Electric Railway, on the tracks of which the complainant is located, and transcontinental railways through Los Angeles. The line of the Southern Pacific, which runs within three-fourths of a mile of the complainant's plant, is found by the commission to form, with its eastern connections, a reasonable and satisfactory through route from New Delhi. Complaint dismissed. (19 I. C. C., 6.)

Including Advertising Matter with Merchandise.

Ouerbacker Coffee Company v. Southern Railway et al. Opinion by Commissioner Clark.

Complainant is engaged at Louisville, Ky., in shipping coffee in packages to various dealers in other states. Light articles of small value are inclosed in the packages as premiums for the purpose of advertising or stimulating the sale of the coffee. Official and Southern Classifications provide for inclusion of advertising matter or articles in packages, but defendants decline to extend that privilege to complainant. Some dealers who offer premiums ship the premiums separately and distribute them on presentation of coupons that are inclosed in the packages. Obviously if all were required to ship in that way no discrimination would appear. It is held that it is unjustly discriminatory for defendants to grant to other shippers the privilege of including advertising matter and articles in packages of merchandise and to refuse the same or similar privilege to complainant. (18 I. C. C., 566.)

Discrimination Against San Pedro.

Harbor City Wholesale Co. of San Pedro, Cal., v. Southern Pacific et al. Opinion by Commissioner Harlan.

Los Angeles, Cal., was originally made a terminal rate point because it was close to the harbor of San Pedro. While there is not much freight movement from eastern points to Los Angeles by way of the harbor of San Pedro, there is nevertheless actually some traffic that moves in that way, and there is therefore potential competition by water. While carriers are not compelled to meet competition as the law now stands, yet the granting of a low rate to Los Angeles because it is near the harbor of San Pedro and depriving San Pedro of the benefit of its own geographical position while affording that benefit to Los Angeles, constitutes an undue discrimination. When one community leans on another for its competitive rates, the benefit of such rates ought not to be denied to the point where the competitive conditions exist. (19 I. C. C., 323.)

Reparation Awarded.

Felton Grain Co. v. Union Pacific et al. Opinion by Commissioner Clements.

Rate on shipment of hay from Henderson, Colo., to Breaux Bridge, La., found unreasonable. (19 I. C. C., 63.)

Stanley Newding v. Missouri, Kansas & Texas et al. Opinion by Commissioner Cockrell.

The rate on second-hand beer bottles from St. Louis, Mo., to San Antonio, Tex., found unreasonable. (19 I. C. C., 29.)

Pennsylvania Smelting Co. v. Northern Pacific et al. Opinion by Commissioner Clements.

A rate of $12 per net ton on lead ore from the Coeur d'Alene district of Idaho to Carnegie, Pa., reduced to $11.40 per net ton. (19 I. C. C., 60.)

Baer Brothers Mercantile Co. v. Missouri Pacific et al. Opinion by Commissioner Clements.

Following the reasoning in 17 I. C. C., 225, the charge on shipments of beer from Pueblo, Colo., to Leadville found unreasonable. (19 I. C. C., 18.)

H. F. Cady Lumber Co. v. Missouri Pacific et al. Opinion by Commissioner Clements.

A charge of 28 cents per 100 lbs. on shipments of lumber dressed in transit from points in Louisiana to Omaha, Neb., found unreasonable. A reasonable rate would have been 23 cents. (19 I. C. C., 12.)

Northern Lumber Manufacturing Co. v. Texas & Pacific et al. Opinion by Commissioner Clements.

Demurrage and storage charges collected as a result of the railways demanding rates in excess of those in their legally filed tariffs should be refunded, and this applies to cases in which such charges are collected on shipments as to which no rates are published. (19 I. C. C., 54.)

STATE COMMISSIONS.

The members of the Public Utilities Commission of Maryland are James M. Ambler (chairman), Joshua W. Hering and Philip D. Laird. The office of the commission is in the Builders' Exchange, Baltimore.

COURT NEWS.

At Guthrie, Okla., July 18, District Judge Huston decided in favor of the railways the tax cases involving levies for 1909 which were contested, on the grounds of alleged irregularities, by the Rock Island, the St. Louis & San Francisco, the Missouri, Kansas & Texas and the Atchison, Topeka & Santa Fe. Injunctions were granted forbidding the collection of the taxes in cases where boards failed to make estimates properly, or when levies were made before valuations were certified by the state auditor because of a delay by the state board.

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF MAY, 1910.
(See also issues of July 8, 15, and 22.)

Name of road.	Mileage operated at end of period.	Operating revenues			Operating expenses						Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or dec.) comp. with last year.
		Freight.	Passenger.	Total, inc. misc.	Maintenance Way and structures.	Maintenance Of equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	143	$85,048	$37,959	$133,753	$18,022	$25,439	$3,783	$43,444	$5,895	$96,583	$37,170	.....	$4,500	$32,670	$15,652
Ann Arbor	301	91,244	35,298	136,010	33,766	17,350	3,196	52,253	2,357	108,922	27,088	—$1,033	12,331	13,724	—11,038
Arizona Eastern	312	111,043	36,199	161,855	21,121	10,462	1,916	38,349	2,934	74,782	87,073	.....	4,469	82,604	48,612
Atlantic & St. Lawrence	167	59,211	23,645	91,954	30,268	9,320	3,259	32,785	1,876	77,508	14,446	.....	6,436	8,010	—8,444
Atlantic City	166	57,159	87,067	151,076	31,282	24,792	2,229	63,776	781	122,859	28,217	—5,040	7,000	16,177	20,495
Carolina, Clinchfield & Ohio	237	82,724	11,980	100,292	10,967	13,958	4,901	25,736	14,839	70,401	29,801	.....	4,000	25,801	37,769
Central New England	278*	244,158	25,073	285,639	66,624	26,855	2,710	78,897	2,783	177,869	107,770	.....	11,500	96,270	27,683
Central Vermont	411	229,081	77,152	326,259	40,544	46,178	6,974	124,225	6,828	224,750	101,519	687	10,116	92,090	—17,342
Charleston & Western Carolina	340	79,401	24,750	110,805	22,564	18,906	2,867	40,877	4,620	89,834	20,971	.....	4,475	16,496	829
Chicago, Peoria & St. Louis	255	98,922	22,440	127,603	26,855	12,527	6,762	61,180	5,166	112,490	15,113	.....	4,500	10,613	2,600
Cleveland, Akron & Columbus	212	165,182	41,850	219,591	37,038	40,622	2,962	72,754	3,844	157,220	62,371	.....	6,500	55,871	2,926
Cumberland Valley	152	212,205	50,187	273,358	43,766	38,091	4,181	83,379	5,896	175,314	98,045	468	4,083	94,370	16,820
Detroit & Mackinac	369†	73,165	22,393	101,272	16,640	16,012	1,873	32,447	3,220	70,192	31,080	—548	8,744	21,788	5,904
Detroit, Grand Haven & Milwaukee	190	94,805	45,226	158,450	35,050	24,159	6,353	76,581	6,717	148,860	9,590	—47	2,727	6,816	—8,761
Detroit, Toledo & Ironton	441	102,568	12,571	124,839	25,795	19,864	2,660	58,625	6,445	113,389	11,450	12	8,172	3,290	—166
Georgia	507	140,092	66,643	220,382	33,008	42,149	10,446	95,886	7,004	188,493	31,889	.....	2,083	29,806	33,548
Gulf & Ship Island	307	119,328	30,705	159,843	20,379	17,925	1,604	47,985	7,189	95,082	64,761	.....	5,245	59,516	23,446
Houston East & West Texas	191	66,548	27,412	99,815	29,510	8,442	1,114	46,863	3,436	89,365	10,450	.....	3,290	7,160	—29,502
Louisiana & Arkansas	255‡	95,859	14,811	114,881	16,486	14,790	2,278	27,186	3,995	64,735	50,146	.....	3,966	46,180	11,646
Louisiana Western	198	92,199	52,492	153,036	20,923	24,657	6,055	43,491	6,342	101,468	51,568	965	6,076	46,457	—4,886
Morgan's La. & Tex. R.R. & S.S. Co.	358	225,660	99,727	347,741	78,976	43,201	11,343	120,633	11,910	266,063	81,678	—2,484	17,755	61,439	—23,521
New Orleans & North Eastern	196	212,255	48,891	283,959	33,077	53,412	9,030	92,442	10,647	198,608	85,351	.....	8,300	77,051	10,006
New Orleans Great Northern	575§	115,428	30,378	153,870	19,365	18,289	2,661	35,068	5,197	80,580	73,290	—68	1,250	71,972	46,770
New York, Philadelphia & Norfolk	112	268,309	31,792	317,122	32,555	51,367	3,136	112,635	9,290	208,983	108,139	.....	6,850	101,289	22,062
New York, Susquehanna & Western	151	135,596	57,078	222,232	21,431	21,014	1,985	78,052	3,404	125,886	96,346	471	11,317	85,500	25,293
Oregon & Washington	191✚	74,794	65,186	146,339	13,271	4,263	8,494	62,508	8,079	96,616	49,723	—1,400	3,755	44,568	43,865
Pecos & Northern Texas	225△	114,381	28,876	148,906	32,358	28,348	2,242	49,988	4,823	117,759	31,146	.....	3,104	28,043	—68,582
Pittsburg, Shawmut & Northern	240	102,003	7,522	111,001	15,698	27,652	1,030	36,515	2,950	83,845	27,156	.....	1,553	25,602	29,986
Richmond, Fredericksburg & Potomac	83	147,641	69,896	245,850	34,786	18,825	2,330	64,795	5,991	126,727	119,123	.....	200	118,923	9,420
St. Joseph & Grand Island	319	81,052	35,152	125,925	55,573	18,972	6,657	62,359	6,359	149,920	—23,995	72	5,389	—29,312	—30,741
Santa Fe, Prescott & Phoenix	257	108,215	29,502	145,133	19,016	10,404	2,767	38,033	5,161	75,381	69,752	.....	100	69,652	11,756
Southern Indiana	236	116,385	15,510	133,228	20,791	23,406	1,811	39,706	5,188	90,903	42,326	—13	6,929	35,384	—1,514
Southern Kansas Ry. of Texas	125	113,367	17,506	134,599	12,686	30,621	2,107	54,966	4,044	104,424	30,175	.....	3,005	27,170	—61,262
Tennessee Central	292	70,000	32,924	110,111	18,938	11,818	3,249	30,497	8,027	72,529	37,582	.....	4,200	33,382	14,349
Vicksburg, Shreveport & Pacific	171	66,369	34,482	110,621	15,070	20,925	3,169	35,952	4,334	79,450	31,171	.....	6,525	24,646	2,783
Washington Southern	35	47,282	33,595	109,022	11,848	10,093	1,032	35,449	2,278	60,700	48,322	.....	2,345	45,977	1,710
ELEVEN MONTHS OF FISCAL YEAR, 1910.															
Alabama & Vicksburg	143	$997,382	$427,558	$1,534,616	$229,667	$240,234	$41,747	$475,800	$58,292	$1,045,740	$488,876	.....	$48,201	$440,675	$162,821
Ann Arbor	301	1,170,593	428,985	1,713,232	264,104	222,640	43,104	595,049	56,042	1,180,938	532,294	—29,532	135,637	367,125	31,876
Arizona Eastern	312	1,232,836	379,878	1,719,740	424,097	116,062	22,277	400,462	38,321	1,001,219	718,520	.....	61,482	657,038	136,105
Atlantic & St. Lawrence	167	913,538	284,034	1,321,151	298,607	147,090	38,295	479,593	32,730	996,315	324,836	.....	70,792	254,044	—17,962
Atlantic City	166	644,216	906,786	1,622,970	299,065	195,853	23,761	768,537	12,059	1,299,275	323,695	—41,621	77,000	205,074	65,188
Carolina, Clinchfield & Ohio	237	853,662	125,028	1,009,295	120,461	169,404	55,108	234,450	94,172	673,596	335,699	.....	39,500	296,199	291,911
Central New England	278*	2,326,233	305,970	2,781,559	466,818	248,226	18,301	818,393	35,552	1,587,290	1,194,269	.....	91,500	1,102,769	274,792
Central Vermont	411	2,292,922	932,004	3,470,425	389,681	624,984	90,948	1,437,016	79,293	2,621,922	848,503	7,994	111,283	745,214	150,718
Charleston & Western Carolina	340	1,099,340	290,026	1,464,717	304,369	199,868	34,095	463,882	41,914	1,044,128	420,589	.....	49,225	371,364	64,409
Chicago, Peoria & St. Louis	255	1,284,520	275,454	1,633,060	245,205	317,035	72,593	664,805	57,873	1,357,511	275,549	.....	47,400	228,149	99,253
Cleveland, Akron & Columbus	212	1,674,235	461,683	2,282,929	359,611	521,014	30,172	787,213	40,891	1,688,901	594,028	.....	57,542	536,486	4,927
Cumberland Valley	152	2,040,139	550,414	2,704,769	378,804	303,072	47,197	813,108	66,314	1,608,495	1,096,274	5,404	44,920	1,056,759	86,867
Detroit & Mackinac	369†	788,646	272,033	1,123,075	180,395	178,004	23,180	359,055	30,705	771,339	351,736	119	95,335	256,520	16,897
Detroit, Grand Haven & Milwaukee	190	1,140,800	504,498	1,885,385	242,412	273,005	64,163	772,764	57,563	1,409,907	475,478	—81	30,000	445,397	125,112
Detroit, Toledo & Ironton	441	1,197,457	143,401	1,450,687	308,544	272,877	31,036	690,776	54,644	1,357,877	92,810	275	73,276	19,808	—53,583
Georgia	307	1,898,569	755,006	2,814,170	350,196	425,736	107,077	1,116,944	78,102	2,078,055	736,115	.....	22,894	713,221	253,942
Gulf & Ship Island	307	1,441,301	380,604	1,941,119	346,294	296,280	15,248	565,889	80,930	1,304,641	636,478	.....	56,161	580,317	188,062
Houston East & West Texas	191	807,218	300,746	1,172,359	215,385	93,996	19,031	407,015	37,369	772,796	399,563	.....	28,186	371,377	10,417
Louisiana & Arkansas	255‡	1,007,595	155,163	1,209,022	177,586	188,947	20,497	303,402	47,106	737,538	471,484	.....	25,285	446,199	119,368
Louisiana Western	198	1,187,610	567,628	1,847,189	220,447	296,904	63,593	525,152	73,228	1,179,324	667,865	306	68,981	599,190	—145,431
Morgan's La. & Tex. R.R. & S.S. Co.	358	3,104,340	1,068,715	4,425,867	646,035	499,293	113,985	1,517,635	140,058	2,917,006	1,508,861	—6,200	199,830	1,302,831	155,361
New Orleans & North Eastern	196	2,354,010	567,764	3,164,739	321,087	488,400	100,705	1,048,307	116,527	2,075,026	1,089,713	.....	90,524	999,189	207,380
New Orleans Great Northern	275§	958,030	323,451	1,352,791	222,217	177,211	25,864	334,785	53,500	813,577	539,214	—828	11,950	526,436	431,932
New York, Philadelphia & Norfolk	112	2,455,519	359,467	3,007,427	308,846	507,999	38,201	1,065,548	102,109	2,022,703	984,724	.....	71,750	912,974	200,139
New York, Susquehanna & Western	151	1,602,783	583,297	2,464,965	274,984	235,810	18,040	918,696	45,300	1,492,830	972,135	—37,663	124,483	809,989	—7,573
Oregon & Washington	191✚	261,428	252,857	546,900	57,384	12,632	42,116	268,046	27,102	407,280	139,630	—5,601	17,085	116,934	114,798
Pecos & Northern Texas	225△	1,184,495	250,204	1,492,902	261,433	228,929	21,168	455,564	44,869	1,011,963	480,939	.....	21,974	458,964	14,655
Pittsburg, Shawmut & Northern	240	938,332	97,508	1,056,217	143,660	285,955	11,786	357,218	35,384	834,003	222,214	.....	17,224	204,990	203,899
Richmond, Fredericksburg & Potomac	83	1,151,146	708,313	2,101,474	312,098	237,500	26,756	659,256	54,820	1,290,429	811,045	.....	2,200	808,845	156,006
St. Joseph & Grand Island	319	1,007,218	379,053	1,497,986	498,790	181,905	70,825	619,058	57,166	1,427,744	70,242	—25	60,751	9,466	—379,498
Santa Fe, Prescott & Phoenix	257	940,852	316,884	1,340,675	185,683	102,265	30,875	342,748	56,708	718,279	622,396	.....	661	621,735	60,075
Southern Indiana	236	1,095,445	159,957	1,272,833	177,779	215,427	22,820	369,817	53,455	839,298	433,535	—297	76,213	357,025	51,930
Southern Kansas Ry. of Texas	125	1,214,652	213,240	1,467,966	175,002	267,983	21,585	489,197	42,252	996,019	471,947	.....	23,132	448,815	131,816
Tennessee Central	292	905,834	336,700	1,315,815	210,188	146,876	37,940	409,659	96,783	901,446	414,369	.....	46,196	368,173	94,149
Vicksburg, Shreveport & Pacific	171	772,134	423,913	1,301,438	231,735	236,661	37,869	388,668	48,573	943,506	357,932	.....	71,769	286,163	44,459
Washington Southern	35	379,191	349,818	962,773	91,432	96,988	11,992	346,190	23,861	570,463	392,310	.....	25,794	366,516	52,954

*Mileage operated on May 31, 1909, 294 miles. †Mileage operated on May 31, 1909, 348 miles. ‡Mileage operated on May 31, 1909, 226 miles. §Mileage operated on May 31, 1909, 92 miles. ✚Mileage operated on May 31, 1909, 6 miles. △Mileage operated on May 31, 1909. 152 miles. —Indicates Deficits, Losses and Decreases.

Railway Officers.

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

R. C. Vaughan has been appointed assistant to D. B. Hanna, second vice-president of the Canadian Northern Steamships, Limited, with office at Toronto, Ont.

The office of E. H. R. Green, president, general manager and purchasing agent of the Texas Midland, has been changed from Terrell, Tex., to New York City. The Terrell office will hereafter be in charge of Eugene Corley, assistant to the president.

F. C. Herr has been appointed claims agent of the Buffalo & Susquehanna Railroad and the Buffalo & Susquehanna Railway, with office at Galeton, Pa. He will have charge of the investigation of claims against these properties, and perform such other duties as may be assigned to him by the general manager.

C. E. Friend, auditor of the Canadian Northern, at Winnipeg, Man., has been appointed general auditor, with office at Winnipeg, and J. D. Morton has been appointed assistant comptroller, with office at Toronto, Ont. L. W. Mitchell, acting treasurer, at Toronto, has been appointed treasurer of the Canadian Northern, the Canadian Northern Quebec, the Canadian Northern Ontario and the Halifax & South Western, with office at Toronto. R. S. Gosset has been appointed auditor of disbursements of the Canadian Northern and the Canadian Northern Quebec, with office at Toronto.

Operating Officers.

Luther M. Jones, whose appointment as superintendent of telegraph of the Atchison, Topeka & Santa Fe has been announced in these columns, has been connected with the telegraph department of that system for the past 20 years. Mr. Jones was born at Creighton, Mo., January 23, 1870, and began railway work as station agent's helper at his native town in 1888. He soon qualified as an operator, his first appointment as such being in August, 1888, at Columbus, Kan., on the Kansas City, Fort Scott & Memphis, now a part of the St. Louis & San Francisco. In November, 1890, he went to the Atchison, Topeka & Santa Fe as operator at Neosho Rapids, Kan. He next went to the despatcher's office at Arkansas City, Kan., remaining there until April, 1891, when he was appointed a clerk in the office of the superintendent of telegraph at Topeka, and four years later he was made chief clerk. In August, 1902, he was appointed assistant superintendent of telegraph of the entire system, which position he held at the time of his recent appointment.

L. M. Jones.

Charles A. Plumley, a chief train despatcher of the Baltimore & Ohio Southwestern, has been appointed division operator, with office at St. Louis, Mo.

W. C. Muir, superintendent of the Canadian Northern Express Co. and the Canadian Northern Telegraph Co. at Winnipeg, Man., has been appointed general superintendent of both companies, with office at Winnipeg. These companies operate the express and telegraph business on the Canadian Northern.

E. W. Grice, general superintendent of the Chesapeake & Ohio at Hinton, W. Va., has been appointed also general manager of the Chesapeake & Ohio of Indiana, with office at Richmond, Va.

W. E. Otterson, station master of the Wabash terminal at Pittsburgh, Pa., has been appointed superintendent of terminals for the new Salt Lake City Union Depot & Railroad Company at Salt Lake City, Utah.

G. W. Hamilton, chief despatcher of the Third and Fourth districts of the Western Pacific at Portola, Cal., has been appointed trainmaster of the First and Second districts, with office at Winnemucca, Nev., succeeding O. Meadows, resigned.

B. W. Moore has been appointed a trainmaster on the Pine Bluff district of the Missouri Pacific-Iron Mountain system, with office at Little Rock, Ark., succeeding W. J. Lawrence, resigned. He will have jurisdiction over the lines from Little Rock to McGehee and from Benton to Pine Bluff.

Traffic Officers.

P. W. Kaill has been appointed a traveling freight agent of the Oregon Short Line, with office at Butte, Mont.

J. L. Bladon has been appointed division passenger agent of the Norfolk & Western, with office at Cincinnati, Ohio, succeeding Allen Hull, retired.

S. B. Franklin has been appointed a commercial agent of the St. Louis & San Francisco, with office at New Orleans, La., succeeding W. J. McMahon.

F. R. Porter has been appointed division freight agent of the Grand Trunk Pacific, in charge of territory including Watrous, Sask., and the West, with office at Edmonton, Alb.

A. L. Anderson has been appointed a traveling passenger agent of the Chicago, Milwaukee & St. Paul, with office at Omaha, Neb., succeeding Edward Mahoney, promoted.

J. D. Mansfield, commercial agent of the Denver & Rio Grande at San Francisco, Cal., has been appointed general claim agent of the Western Pacific, with office at San Francisco.

A. M. Fenton, district freight and passenger agent of the Chicago, St. Paul, Minneapolis & Omaha at Duluth, Minn., has been appointed assistant general freight agent, with office at Minneapolis.

E. A. Jack, Jr., chief clerk in the office of the traffic manager of the Terminal Railroad Association of St. Louis, has been appointed freight claim agent, succeeding S. D. Webster, assigned to other duties.

J. C. McDonald, general passenger agent of the National Railways of Mexico, having resigned, the duties of that office will be assumed by C. W. Fish, whose appointment as traffic manager has been announced.

Lewis L. Davis has been appointed a commercial agent of the Union Pacific, the Southern Pacific, the Oregon Short Line, the Oregon Railroad & Navigation Company and the Oregon & Washington, with office at Milwaukee, Wis.

O. P. Bennett, traveling freight agent of the Chicago, Peoria & St. Louis at Peoria, Ill., has been appointed general agent, with office at Minneapolis, Minn., where the company has recently established a general freight agency.

George W. Smith, agent of the Union Line, Pennsylvania Lines West of Pittsburgh, at Minneapolis, Minn., has been appointed export agent, with office at Chicago; Harry C. Wilson, agent at Kansas City, Mo., succeeds Mr. Smith; Lyle G. Griffin, agent at Omaha, Neb., succeeds Mr. Wilson; Louis W. Blessig, agent at Sioux City, Iowa, succeeds Mr. Griffin, and Stephen J. Alexander succeeds Mr. Blessig.

G. A. Blair, general eastern agent of the Chicago, Milwaukee & St. Paul at New York, has been appointed assistant general freight agent, with office at Chicago. W. W. Hall, New England freight and passenger agent at Boston, Mass., has been appointed general agent, succeeding to the duties of Mr. Blair,

and J. H. Skillen, commercial agent at Buffalo, N. Y., succeeds Mr. Hall, effective August 1.

S. V. Derrah, assistant general freight agent of the Denver & Rio Grande at Salt Lake City, Utah, will also represent the Western Pacific at Salt Lake City as assistant general freight agent.

Charles Sorg, Jr., has been appointed a traveling freight and passenger agent of the Chicago, Burlington & Quincy, with office at Dallas, Tex., succeeding C. E. Lewis, resigned to become assistant city passenger and ticket agent of the Galveston, Harrisburg & San Antonio at Houston, Tex.

George Pepall has been appointed assistant foreign freight agent of the Grand Trunk, with office at Toronto, Ont., succeeding F. R. Porter, who goes to the Grand Trunk Pacific. Mr. Pepall will continue to represent the National Despatch-Great Eastern Line in connection with export traffic via that route.

J. F. Hixson, district freight and passenger agent of the Southern Pacific at Reno, Nev., has been appointed district freight and passenger agent, with office at Fresno, Cal., succeeding E. W. Clapp, transferred to the general offices in San Francisco. J. M. Fulton, general agent at Reno, succeeds Mr. Hixson.

A. A. Polhamus has been appointed general agent, passenger department, of the Canadian Pacific, with office at Los Angeles, Cal. A. L. Powell has been appointed a traveling passenger agent, with office at Brandon, Man., succeeding W. J. Wells, transferred, and W. H. Snell has been appointed eastern passenger agent of the New York territory, succeeding F. W. Dudley, resigned.

Engineering and Rolling Stock Officers.

C. T. Broxup, locomotive superintendent of the Manila Railroad, at Caloocan, Philippine Islands, has resigned.

Frank L. O'Donnell has been appointed assistant road foreman of engines on the Philadelphia division of the Pennsylvania Railroad.

F. W. Alexander has been appointed assistant division engineer of the Canadian Pacific, with office at Calgary, Alberta, succeeding T. Martin, promoted.

T. H. Haggerty has been appointed smoke inspector on the Chicago terminal division of the Chicago, Rock Island & Pacific, with office at Chicago, succeeding E. A. Lutzow, resigned.

F. I. Cabell, engineer maintenance of way of the Chesapeake & Ohio at Richmond, Va., has been appointed also chief engineer maintenance of way of the Chesapeake & Ohio of Indiana, with office at Richmond.

J. S. Berry, superintendent of bridges and buildings of the St. Louis Southwestern at Tyler, Tex., has been transferred to St. Louis, Mo. William Quinn, master carpenter at Tyler, succeeds Mr. Berry, in charge of the Texas lines of the company.

G. E. Ellis, formerly signal engineer of the Chicago, Rock Island & Pacific at Chicago and recently connected with the Federal Signal Company, has been appointed signal engineer of the Kansas City Terminal Railway, with office at Kansas City, Mo.

OBITUARY.

Edward A. Smith, formerly prominent in railway circles in Kansas City, Mo., died at St. Louis, Mo., on June 22, at the age of 75 years. Mr. Smith was for 12 years general agent of the Missouri Pacific at Kansas City, and was also for a number of years general agent of the Kansas City, Memphis & Birmingham, now a part of the Frisco system. He was employed in the engineering department of the Atchison, Topeka & Santa Fe when that company was building its line between Kansas City and Topeka. His last position was general freight agent of the Deckerville, Osceola & Northern, now also a part of the Frisco.

Paul J. White, formerly an assistant engineer on the Central Railroad of New Jersey, died July 13, at his home in Bethlehem, Pa. Mr. White was born in Philadelphia on November 4, 1830. He began railway work as an engineer for the Pittsburgh, Fort Wayne & Chicago, and was also on the Memphis & Charleston. From 1856 to 1866 he was principal assistant engineer of the Lehigh & Susquehanna division of the Central Railroad of New Jersey, and for the three years following was employed between Easton, Pa., and Hokendauqua. He was engaged in the construction of the Lehigh & New England near Bloomsburg, N. J., from 1869 to 1873, and was then engaged by Collins Brothers to become an engineer on the Madeira-Mamore Railroad in Brazil. Mr. White started on the journey but was turned back when the ship on which he was a passenger was wrecked on the coast of North Carolina. From 1878 to 1887 he was locating engineer for the New York, Lake Erie & Western, now the Erie Railroad, in McKeen county, and carried out similar work for the Pennsylvania Railroad in Chester, Jefferson and Center counties. He had charge of the work of construction and extension of the Lehigh Coal & Navigation Co. from Wind Gap, Pa., to Saylorsburg. Mr. White was active in several fraternal organizations and in county affairs. For the past 15 years he lived in retirement and for the last five years has been suffering from the illness which caused his death.

Paul J. White.

FOREIGN RAILWAY NOTES.

Japan purposes to spend $20,000,000 for new railways in Corea, of which manufacturers and dealers in supplies will take due notice—likewise Puget Sound dealers in bridge timbers, etc. The railway from the capital at Seoul to the Manchurian border at Wiju, which was built in a hurry to meet the needs of the war with Russia, is to be rebuilt and improved. This will connect with the Manchurian line from Antung to Mukden, and the whole line, together with that from Seoul to Fusan, on the straits opposite Shimonoseki, will form really the Japanese connection with the Siberian Railway, the whole distance from Mukden southeast to Fusan being about 500 miles. Japan also contemplates considerable expenditure for improvements of its old lines in Japan, with comparatively small additions to mileage.

The Russians are said to have more than a hundred engineers and some 12,000 laborers at work on the Amoor Railway, following down that river to Chabarowsk, where the Ussuri Railway will connect it with Vladivostok, thus giving Russia a line wholly on its own soil to the Pacific. This new line will be 1,483 miles long, through a very thinly peopled country, and for a large part of the distance difficult, so that the cost per mile has been estimated at more than $100,000, which is probably exaggerated. The cost is increased by the refusal of Russia to employ Chinese laborers, who are close at hand and cheap; but the government sends Russians some 5,000 miles at great expense, in hopes that they will settle the country on the line. It is hardly to be hoped that the road will yield any profits to speak of, at least for a long time to come; but Russia apparently feels unsafe without something better than steamboats on this border, while China, just across the river, has a growing railway system and is beginning to have an army; and Japan already has both and is exercising a good deal of power in Manchuria.

Railway Construction.

New Incorporations, Surveys, Etc.

BIRMINGHAM, SELMA & PENSACOLA.—An officer writes that the plans call for a line from Birmingham, Ala., south via Bessemer, Blockton, Centerville, Marion and Selma, to Pensacola, Fla., about 230 miles. Track has been laid on four miles. There will be one steel bridge. The principal revenue will be derived from carrying coal, timber, iron ore, marble and cotton. J. C. Suttle, Vick, Ala., and H. E. Reynolds, Centerville, are interested.

BROWNWOOD NORTH & SOUTH.—According to press reports, construction work is to be started about August 1 on the section from Brownwood, Tex., north to May. The line is eventually to be extended further north to a point on the Texas & Pacific. John Mead, chief engineer, Brownwood. (March 25, p. 849.)

BUFFALO & LAKE ERIE TRACTION.—See Jamestown, Chautauqua & Lake Erie.

BUTTE, BOISE & SAN FRANCISCO.—Incorporated in Montana, with $25,000,000 capital, to build from Butte, Mont., southwest through Montana, Idaho, Oregon and California to San Francisco. It is estimated that it will cost $40,000 a mile to build the line. It is understood that the right-of-way will be secured at once and construction work started soon. W. H. Haviland, former state senator of Montana, president; T. Tomich, vice-president; T. H. McCabe, secretary, Butte, and V. S. Ruelene, Paris, France, treasurer.

CANADIAN NORTHERN.—A contract is said to have been given to McMillan Brothers for building from Edmonton, Alb., west to the Pembina river, 70 miles.

Plans are said to be made for extensive improvements on the main line between Edmonton, Alb., and Winnipeg, Man., including new ballast and 80-lb. rail to replace the present 60-lb. rail.

CHICAGO, ROCK ISLAND & PACIFIC.—An officer writes that work is now under way putting in new rail between Des Moines, Iowa, and Council Bluffs.

CINCINNATI & PITTSBURGH ELECTRIC.—An officer writes that this company has been organized to build an electric line from Cincinnati, Ohio, following as near as practicable the north side of the Ohio river to Pittsburgh, Pa. Contracts have not yet been let, but it is expected that work will be started in the near future. A. E. Cox, president, Huntington, W. Va.

COLORADO EASTERN.—This company, which operates a 17-mile narrow-gage line from Denver, Colo., east, and owns valuable terminal property in Denver, has plans made, it is said, for building a line under the name of the Denver & Omaha Short Line, between Denver and Omaha, Neb. The proposed route is from Denver east for about 250 miles to a point 12 miles north of Lenora, Kan., thence northeast via Hastings, Neb., to Omaha, a total of 500 miles. It is estimated that the construction and equipment will cost about $20,000 a mile. The company proposes to increase its capital stock from $1,000,000 to $20,000,000. Surveys and plans for such a line were made before the panic of 1907, and were then dropped because the time was unfavorable for financing the project.

DENVER & GULF.—According to press reports, a contract has been given to the Shumway Construction Co., New York, for building 55 miles of line from Lamar, Colo., the work to be started in July and finished by January, 1911. The company plans to build a line from Denver, Colo., southeast to Dallas, Tex. F. A. Umsted, president, Texhoma, Okla.; W. R. Evans, vice-president, Lamar. (March 18, p. 749.)

DENVER & OMAHA SHORT LINE.—See Colorado Eastern

GULF & NORTHWESTERN.—An officer is quoted as saying that this line has been located and nearly all the rights-of-way secured in the state of Kansas. Financial arrangements are being made and it is expected that construction work will be begun about August 1. The plans call for a line from Oklahoma City, Okla., northwest through Kansas, to Sterling, Colo., where connection is to be made with the Union Pacific and the Chicago, Burlington & Quincy. An extension is eventually to be built from Oklahoma City, south to Denison, Tex. J. B. Dyatt, president, Goodland, and R. B. Ketchum, consulting engineer, Salt Lake City, Utah. (April 8, p. 970.)

GULF, TEXAS & WESTERN.—According to press reports, this company has under consideration the question of building the proposed extension to Lubbock west from the present western terminus at Seymour, Tex., via Paducah, in Cottle county. Surveys to Paducah are to be made and if these are favorable it is understood that the company will build the line. (May 27, p. 1324.)

HAMPDEN RAILROAD.—An officer writes that plans are being made to incorporate this company in Massachusetts, with $1,000,000 capital, and headquarters at Springfield, Mass. As soon as the preliminary steps have been taken application will be made for a certificate of exigency. The plans call for a line from Springfield and Holyoke to Bondsville, about 25 miles, where connection is to be made with the Massachusetts division of the Boston & Maine and the New London Northern division of the Grand Trunk System. The directors include: R. D. Gillett, Westfield; H. H. Vowman, Springfield; A. W. Eaton, Pittsfield; A. D. Robinson, H. W. Ely, Westfield; J. A. Skinner, Holyoke, and F. T. Ley, Springfield.

HANFORD & SUMMIT LAKE (ELECTRIC).—An officer writes that a contract has been given to Libby & Heins, Santa Cruz, Cal., for building from Hanford, Cal., westerly via Grangeville and Hardwick to Summit lake, 18 miles, and work is to be started at once. Maximum grades will be 0.3 per cent. and maximum curvature 3 degs. There will be about 1,500 ft. of pile trestle work. C. King, president, and J. B. Rogers, chief engineer, Hanford. (July 15, p. 142.)

HUMBOLDT & EASTERN.—Permanent surveys are being made for this line, which is to connect Eureka, Cal., with Red Bluff or Redding. The line must be finished from Eureka east to Wildwood, in Trinity county, within five years. E. E. Skinner, secretary, Eureka. (Dec. 17, p. 1213.)

JAMESTOWN, CHAUTAUQUA & LAKE ERIE.—Application has been made to the New York Public Service Commission, Second district, for permission to electrify this road, which runs from Westfield, N. Y., to Jamestown, 37.5 miles, and is operated by the Buffalo & Lake Erie Traction Co.

JOHNSTOWN & ALTOONA (ELECTRIC).—Bids are wanted and contracts may be let soon to build this line. The plans call for a line from South Fork, Pa., northeast via Portage, Cresson and Gallitzin, to Altoona, 30 miles. About 34 per cent. will be rock work. There are to be 12 bridges along the line, and the company will build a power house. G. U. G. Holman, general manager, Johnstown. (April 15, p. 1066.)

KNOXVILLE, SEVIERVILLE & EASTERN.—This company is planning to build an extension from Sevierville, Tenn., east to timberlands, about 15 miles. The company's men will probably carry out the work.

MISSOURI, KANSAS & TEXAS.—This company will extend its line from Chitwood to Joplin to connect with the union depot terminals. The improvements are to be finished the first of next year, when the new station will be opened. New freight yards are also to be built.

NEVADA NORTHERN.—According to press reports, this company is making preliminary survey for a branch to be built in Nevada from the east side of Steptoe valley to the Nevada Mines Co., at Ward, 14 miles.

NEWPORT & SHERMAN'S VALLEY.—This company is said to be making surveys for a 16-mile extension to be built in Perry county, Pa. The company now operates a 29-mile line from Newport, Pa., southwest to New Germantown.

NEWTON NORTHWESTERN.—According to press reports, surveys are to be started at once by the J. A. Kauffman Co., Dayton, Ohio, from Newton, Miss., northwest via Conehatta and Walnutgrove, to Carthage, about 45 miles. D. L. Raglan, president, Newton. (June 17, p. 1568.)

NEW YORK DOCK RAILWAY.—The New York Public Service Commission, First district, will hold a hearing July 29 on the application of this company for a franchise to operate a railway along its dock system. The line is to be about three miles

long and will extend from a point near the Catharine street ferry, in the borough of Brooklyn, to Atlantic basin. The directors include: J. B. Summerfield, G. E. Spencer, C. E. Hotchkiss, H. M. Haviland, W. MacFarland Lord, W. Haviland, A. N. Taylor, C. A. Lewis and C. Jackson.

New York Subway.—Bids for subway construction, which it was expected would be asked for in July, may not be ready until the latter part of August or the early part of September. (April 22, p. 1065.)

Norristown Transit Co.—See Philadelphia & Western.

Oregon Railroad & Navigation Co.—According to press reports, this company is planning to build a cut-off from Coyote, in Morrow county, Ore., east to Stanfield, 26 miles. The cost of the work will be about $800,000.

Pacific & Idaho Northern.—According to press reports, a contract has been given to Maney Brothers & Co., Ogden, Utah, to build the extension from the present terminus at Evergreen, Idaho, northeast to Meadows, 16 miles. The contract calls for the completion of the work by November 1. (June 17, p. 1568.)

Pensacola, Mobile & New Orleans.—A contract has been given to Henry McLaughlin, Pensacola, Fla., for grading a section of 10 miles on the line under construction from Pensacola, northwest to Mobile, Ala., 60 miles. Grading has already been finished on 30 miles. The work involves the handling of about 40,000 cu. yds. per mile. E. McLaughlin, president, and L. G. Wilkinson, superintendent of construction, Pensacola. (April 8, p. 971.)

Philadelphia & Western.—Under the name of the Norristown Transit Co. a charter has been secured in Pennsylvania to build a four-mile line from Norristown, Pa. The new company has a capital of $24,000. Charles E. Ingersoll, president.

Philadelphia Rapid Transit.—It is officially stated that this company will apply for a franchise to extend its line from Chester avenue, Yeadon, to the Sixty-ninth street terminal.

St. Louis & Kansas City Electric.—An officer writes that contracts will be let about October 1 to build from Kansas City, Mo., east via Blue Springs, Oak Grove, Odessa, Higginsville, Marshall, Arrowrock, New Franklin and Columbia to St. Louis, 250 miles. The line is to be double-tracked and the work will be heavy. Maximum curvature is to be 4 degs. The plans include putting up station houses, power houses and barns. D. C. Nevin, president; W. B. Cauthorn, chief engineer, 1014 Commerce building, Kansas City.

Savannah & Southwestern.—Incorporated in Georgia, with $1,000,000 capital, to build from Savannah, Ga., west across the state of Georgia to Fort Gaines, about 250 miles. The incorporators include: F. R. Durden, E. M. Frank, Savannah; J. H. Perkins, W. C. Perkins, D. M. Bradley and P. M. Anderson.

South Dakota Interurban.—An amendment to this company's charter has been filed in South Dakota, increasing the capital stock from $1,000,000 to $2,000,000. The company was organized, with headquarters at Centerville, to build about 160 miles from Sioux City, Iowa, northwest to Bijou Hills, S. Dak. Permission has been asked to make Chamberlain, on the Missouri river, the western terminus instead of Bijou Hills. The promoters have been securing right-of-way during the past year. The incorporators include: F. E. Graves, W. E. Muller, C. E. Todd, Bijou Hills, and G. A. Miller, Academy, S. Dak.

Southern Cambria (Electric).—Construction work has been started, it is said, on an extension north to Ebensburg, Pa. The line is eventually to be further extended north to Carrolltown.

Texas Central.—An officer writes that the stockholders have been asked to authorize a $20,000,000 mortgage. No definite plans have been outlined as to future extensions.

Virginian Railway.—An officer writes that plans are being made for the revision of grades and alinement between Harper, W. Va., and Cirtsville. This work is made necessary on account of some large wooden viaducts which will have to be renewed within a year or two.

Railway Financial News.

Chesapeake & Ohio.—A statement by the company says when present plans are completed, the Chesapeake & Ohio of Indiana, the successor of the Chicago, Cincinnati & Louisville, will have outstanding $8,200,000 bonds and $3,000,000 stock. No part of either will be offered to the public, as the entire issue will be held in the C. & O. treasury. These securities about cover the purchase price and obligations assumed thereunder in the C., C. & L. acquisition.

Colorado & Southern.—The New York Stock Exchange has listed $3,000,000 additional refunding and extension mortgage 4½ per cent. bonds due 1935. Of these bonds $262,000 were issued for refunding purposes: $803,110 for betterments and improvements for 1909, of which $48,242 have already been appropriated and $754,868 is held for future expenditures; $225,631 for the acquisition of $100,000 stock and $176,000 first mortgage 6 per cent. bonds of the Denver & Interurban; $63,520 for $60,576 stock of the Fort Worth & Denver City, and $1,645,739 for $81,600 stock and $1,872,880 first mortgage 6 per cent. bonds of the Stamford & Northwestern.

Chicago, Cincinnati & Louisville.—See Chesapeake & Ohio.

Chicago Great Western.—This company has bought the property of the Leavenworth Terminal Railway & Bridge Co., or control of its stock. The Bridge company has $600,000 stock and $600,000 bonds.

Chicago Southern Railway.—See Southern Indiana.

Leavenworth Terminal Railway & Bridge Co.—See Chicago Great Western.

Kentucky & Indiana Bridge Co.—The agreement between the Baltimore & Ohio Southwestern, the Chicago, Indianapolis & Louisville, the Southern Railway and the Kentucky & Indiana Bridge & Terminal for the organization of a new company to build a new bridge over the Ohio river has been filed in the county clerk's office at Louisville, Ky. See an item in regard to this bridge under Louisville, Ky., in the *Railway Age Gazette* of July 8, page 107.

Manila Railroad.—Speyer & Co., New York, are offering $2,000,000 first mortgage 4 per cent. bonds due 1939 at 86. The government of the Philippine Islands guarantees payment of interest on these bonds. The Manila Railroad, which succeeded the old Spanish company holding concessions from the Spanish government, was organized in 1906 under the laws of New Jersey and holds concessions for 820 miles of railway on the island of Luzon. The $3,652,800 7 per cent. cumulative preferred stock and $2,130,700 common stock are owned by the Manila Railway. The lines authorized are divided into "northern lines," comprising 350 miles of line north of Manila, and "southern lines," comprising about 470 miles south of Manila. There are now in operation 286 miles of northern line and 60 miles of southern line. The northern and southern lines and their accounts are kept distinct, as if owned by separate companies, but are under the same management. The present offering of bonds is part of an authorized issue of $30,000,000, secured by a first mortgage on all of the southern lines.

St. Louis & San Francisco.—The New York Stock Exchange has listed $578,000 additional 4 per cent. refunding mortgage bonds. Of these bonds, $64,000 were issued to retire an equal amount of underlying bonds, $14,000 were issued for refunding purposes, and $500,000 for additions and improvements.

Southern Indiana.—A plan for the reorganization of this company and its consolidation with the Chicago Southern Railway has been prepared and is being considered by the reorganization committee. The *Commercial and Financial Chronicle* says that it is expected that the plan will be placed before depositing bondholders for their approval before the end of the month.

The court has ordered the receiver to deposit with the Bankers' Trust Co., New York, money to pay the interest coupons due August 1, 1909, on the first mortgage 4 per cent. bonds, together with interest thereon at 6 per cent., in all about $21.20 per coupon.

Supply Trade Section.

Fire destroyed 15 freight cars of the Chicago, Rock Island & Pacific in the yards at Chicago. The loss was about $20,000.

The Chicago Air Brake Co., Chicago, has been incorporated, with a capital of $10,000, by A. L. Myers, Sidney Lyon and David Jetzinger.

The Jeffrey Mfg. Co., Columbus, Ohio, will move its Denver office from 1711 Tremont place to the First National Bank building on Aug. 1.

The Vaughn Rail Support Co., Chicago, has been incorporated with a capital of $5,000. The incorporators are: Garrie I. French, David R. Jones and James E. Turner.

Winthrop B. Lillis, general foreman of the Illinois Central shops at Waterloo, Iowa, has resigned to accept a position as superintendent of the Greenlee Brothers Company, Rockford, Ill.

The American Spark Arrester Co., Indianapolis, Ind., has been incorporated with a capital of $100,000. The incorporators are: T. A. Van Horn, C. A. McCotter, H. N. Knight, C. F. Remy, J. W. Sale, E. E. Perry and V. E. Butler.

The Whipple Supply Company has taken larger quarters at 50 Church street, New York, rooms 2065 and 2066. On June 1 it established western offices in the First National Bank building, Chicago, in charge of H. F. Keegan, western manager of sales.

The Chickamauga Steel & Iron Company has been incorporated under the laws of New Jersey with a capital stock of $5,000,000, divided into common shares of the par value of $100 each. The incorporators are: George W. Adams, Montclair; Robert W. Pollock, 51 Chambers street, New York City, and Francis Van Winkle, 134 Guernsey street, Brooklyn. The Registrar & Transfer Company, of 15 Exchange place, Jersey City, is the registered agent of the concern.

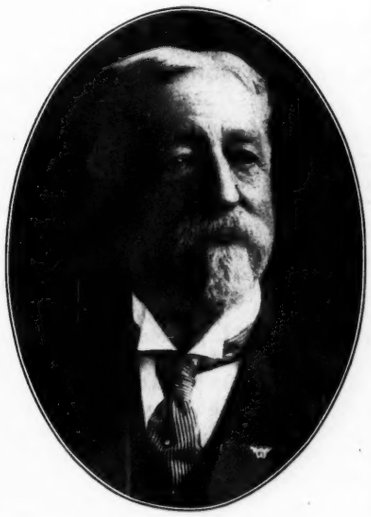
The Union Machine Co., Inc., 164 University avenue, St. Paul, Minn., has been appointed selling agent for the products of the Plunger Plastic Packing Co., Inc., St. Paul. These products include the D. & L. throttle rod stuffing boxes and Plunger plastic packing. The packing in this box can be applied with a full head of steam in the boiler, and the box can be applied to old or new locomotives without change of throttle rod or connections. It has been in satisfactory service for three years.

The Isthmian Canal Commission will receive bids until September 16 to furnish and erect machinery to operate the Stoney gate valves for controlling the main culverts, and machinery to operate the cylindrical valves for controlling the lateral culverts of the upper lock and the Pedro Miguel lock (Circular No. 596); until August 15 for water meters and steel billets (Circular No 597); until August 19 for steel castings, manganese steel bushings, steel, iron, brass condenser tubes, cast iron pipe, sluice gate, valves, pumps, etc. (Circular No. 598).

W. M. Chamberlin, manager promotion department of the Detroit Lubricator Company, Detroit, Mich., has resigned, effective August 1, to become manager of a bureau of general service of The American Supply & Machinery Manufacturers' Association, to be located at Detroit. The establishment of this bureau is in line with the inauguration of an aggressive campaign by this association for the furtherance of the mutual interests of its members. G. K. MacEdward will succeed Mr. Chamberlin as manager of the promotion department of the Detroit Lubricator Company. He has been associated with the Gray Motor Company.

The American Water Softener Company, of Philadelphia, Pa., has recently received orders for 15 water softening plants from the Norfolk & Western, ranging in capacity from 12,500 to 18,000 gallons per hour, and also an installation of similar design for the Toronto, Hamilton & Buffalo at Hamilton, Ont. The business in the filter department is equally good and includes recent orders from the Salisbury Water Works, Salisbury, N. C.; Town of Weston, Ont.; Decatur Water Works Co., Decatur, Ala.; Philadelphia Paper Mfg. Co., Philadelphia, Pa.; Merchantville Water Co., Merchantville, N. J., and the Midvale Steel Co., Philadelphia, Pa.

Albert W. Jack, vice-president of the Star Headlight Co., Rochester, N. Y., died at the Graham Hospital in that city on July 20. Mr. Jack was one of the "old timers" in the railway supply business. He was born in New Bedford, Mass., in 1841, and for 25 years was a member of the firm of Grier & Jack, Chicago, dealers in railway supplies. He next went with Hibbard, Spencer & Bartlett, Chicago, as a sales manager, and then moved to Toledo, Ohio, where he started a railway department for the Libby Glass Co. Twelve years ago he left the latter concern, and went with the Star Headlight Co. as sales manager. Mr. Jack was prominent in Masonic circles.



Albert W. Jack.

The Allis-Chalmers Company, Milwaukee, Wis., has lately received the following orders for electric equipment: The Nairn Linoleum Company, Newark, N. J., one 100-h.p., 550-volt, three-phase, 60-cycle squirrel cage induction motor; Marquette Motor Company, Saginaw, Mich., two 100-k.v.a., 4,600/115-volt, and three 150-k.v.a., 4,600/460-volt, oil-filled, self-cooled transformers; Florida Mining Company, one 115-k.w. belted machine, 2,300-volts, 60-cycle, three-phase current, 900 r.p.m., and four 250-k.v.a. oil-filled, self-cooled Allis-Chalmers transformers; Du-Pont Powder Company, 11 type "K" direct-current motors and 15 induction motors; North Shore Electric Company, Evanston, Ill., 172-k.v.a., 60-cycle, 2,300/5,300-volt transformers; Colonial Crayon Company, Port Clinton, Ohio, one 50-k.w. generator, four induction motors and two lighting transformers; The Electric Light Company, Manitowoc, Wis., one 100-k.w. alternator; The Layton Milling & Electric Company, Layton, Utah, one 50-h.p. and two 10-h.p., 220-volt, three-phase, 60-cycle, squirrel-cage induction motors; State Home for Feeble Minded, Polk, Pa., two 125-k.v.a., two-phase, 60-cycle, 1,100-volt generators.

U. S. Steel Quarterly Earnings.

The United States Steel Corporation's total net earnings for quarter ended June 30, 1910, was $40,170,960, an increase of $2,554,084 from quarter ended March 31, 1910, and an increase of $10,830,469 from quarter ended June 30, 1909. Unfilled orders on hand June 30, 1910, amounted to 4,257,794 tons, a decrease of 1,144,720 tons from March 31, 1910, and an increase of 199,855 tons from June 30, 1909. The regular quarterly dividends of 1¼ per cent. on the common stock, and 1¾ per cent. on the preferred stock was declared. The United States Steel Corporation will hereafter make public on the 10th day of each month the aggregate tonnage of unfilled orders on hand at the close of the previous month, according to a resolution adopted Tuesday.

The foregoing earnings compare with previous quarters as follows:

Quarter ended:	Total net earnings.
March 31, 1910	$37,616,876
December 31, 1909	40,982,746
September 30, 1909	38,246,907
June 30, 1909	29,340,491
June 30, 1908	20,265,756
June 30, 1907	45,503,705
June 30, 1906	40,125,033
June 30, 1905	30,305,116
June 30, 1904	19,490,725
June 30, 1903	36,642,308
June 30, 1902	37,666,058

The unfilled orders on hand June 30, 1910, were 4,257,794 tons. This compares with previous quarters as follows:

Quarter ended:	Unfilled orders.
March 31, 1910	5,402,514
December 31, 1909	5,927,031
September 30, 1909	4,796,833
June 30, 1909	4,057,939

TRADE PUBLICATIONS.

Core Drills.—The Davis "Calyx Diamondless" core drills, manufactured by the Ingersoll-Rand Company, New York, are described in Bulletin No. 9001, issued by that company. The classes of work for which these drills are adapted are considered at length, as are also the cost of drilling, the operation of the drills and the apparatus used in connection with them. The bulletin contains 48 pages and 52 illustrations.

Hydraulic Jacks.—Richard Dudgeon, New York, has just issued booklets 9 and 11. Booklet No. 9 is printed in the Spanish language and especially illustrates and describes the new Universal hydraulic jack. Booklet No. 11 is printed in the French language and contains descriptions and illustrations of the Universal hydraulic jack and pressure pumps, as well as a number of types in which this jack may be obtained. These booklets will be sent to interested parties on request.

Union Pacific.—"Sights and Scenes from the Car Windows" is a 130-page booklet giving brief descriptions of the principal towns along the line of the Union Pacific from Council Bluffs, Iowa, to San Francisco, Cal., intended for the use of passengers on that line. Interesting points about each community are brought out, and suggestive photographs are used to illustrate the descriptions. Another booklet describes the automatic electric block signals in use on the entire line from Council Bluffs to San Francisco.

RAILWAY STRUCTURES.

Greenville, S. C.—A contract is said to have been given by the Charleston & Western Carolina to the Gallivan Building Co., Augusta, Ga., for putting up five brick warehouses on Court street, in Greenville. The contract is said to be worth $70,000.

Houston, Texas.—The Houston Belt & Terminal Company has given a contract to the American Construction Company for building a steel bridge across the ship channel above the Turning Basin. It will have a 240-ft. draw. The 120-ft. opening will be large enough to allow the passage of two large sized steamers.

Iowa City, Iowa.—The Chicago, Rock Island & Pacific has let the contract to T. S. Leake & Co., Chicago, for building a one-story brick freight house, 30 ft. x 200 ft.

Joplin, Mo.—See Missouri, Kansas & Texas under Railway Construction.

Kamloops, B. C.—According to press reports, a contract has been given by the Canadian Pacific to McDermott & Co., Winnipeg, Man., for putting up a machine shop and roundhouse in Kamloops. The Canadian Pacific is to supply the steel. The estimated cost of the improvements is $250,000.

La Grande, Ore.—Plans are now being made by the Oregon Railroad & Navigation Co. for a brick and steel machine shop to be built at La Grande. The building is to be 130 ft. x 130 ft., and will cost about $44,000.

Little Rock, Ark.—The Chicago, Rock Island & Pacific contemplates the building of a 20-stall roundhouse, 300-ton coal chute, 165,000-gal. steel tank, 40-ft. track scale and cinder pit.

McMinnville, Ore.—The Oregon Electric is said to have secured land in McMinnville, to be used as a site for a station and terminal.

Murray, Utah.—It is reported that the Oregon Short Line will build a passenger station and freight house to cost about $10,000.

Muskogee, Okla.—The Missouri, Kansas & Texas has let a contract, it is said, for a new freight house to be 60 ft. x 500 ft., at Muskogee. Work on the building, which is to cost $200,000, will be started August 1, and must be completed in 90 days.

New Orleans, La.—The Illinois Central has prepared plans for new inbound and outbound freight warehouses in the Poydras street yards, but no work has yet been authorized.

Oswego, N. Y.—An officer of the New York Central & Hudson River writes that a contract has been given to the Lackawanna Bridge Co., and work is to be started at once on a freight car shop at Oswego. The building is to be of steel and concrete construction, one-story high, 80 ft. x 560 ft.

Ottawa, Ont.—According to press reports, the contract was let recently for the superstructure of the Le Pas bridge on the Hudson Bay Railway. (July 22, p. 176.)

Pecos, Tex.—The Kansas City, Mexico & Orient has begun work on a passenger station of native stone.

Portland, Ore.—The Oregon Railroad & Navigation Co. has awarded the contract for the building of a new freight station to Lewis A. Hicks & Co., San Francisco, Cal. (July 22, p. 176.)

Portola, Cal.—The Western Pacific will build 10 additional stalls to the roundhouse, which now has a capacity of 10 locomotives.

Sacramento, Cal.—The War Department is said to have granted permission to the Northern Electric and the Vallejo & Northern to build the bridge over the Sacramento river at M street, in Sacramento. It is understood that contracts for building the bridge will be let at once. (July 8, p. 1071.)

St. Joseph, Mo.—It is said that the St. Joseph & Savannah Interurban Railway Co. will build one pile trestle 50 ft. high and 500 ft. long, and two minor trestles from 14 to 56 ft. each in length.

St. Louis, Mo.—See St. Louis & Kansas City Electric under Railway Construction.

Scranton, Pa.—An officer of the Delaware, Lackawanna & Western writes that the company expects to open the new shops at Scranton on or before January 1, 1911. The shops will be used entirely for the repairs and the rebuilding of locomotives, but not for new work. (Sept. 24, p. 568.)

South Fork, Pa.—See Johnstown & Altoona (Electric) under Railway Construction.

Taylor Texas.—It is officially stated that the International & Great Northern will erect at once three more solid steel and concrete buildings at the new shops and roundhouse plant. The three buildings will cost about $15,000.

Vancouver, B. C.—Plans are being made by the British Columbia Electric, it is said, for a five-story reinforced concrete steel terminal station and office building to be built at Vancouver. (Dec. 17, p. 1218.)

It is said the Great Northern has secured a tract of land on Falls creek, on which it will build terminals comprising a depot, shops and yards.

Waukegan, Ill.—The Elgin, Joliet & Eastern has let the contract to the Unit Construction Co., Chicago, for building a one-story reinforced concrete roundhouse.

Wilmington, N. C.—Bids are wanted August 16 by C. R. Humphreys, city engineer, Wilmington, for the superstructure of a 142-ft. steel highway bridge, to be built over the tracks of the Atlantic Coast Line, at Sixth street, in Wilmington.

Late News.

The items in this column were received after the classified departments were closed.

Improvements to cost $150,000 are to be made this fall to the freight terminals of the Seaboard Air Line at Savannah, Ga.

The Cazenovia & Sauk City will let contracts about August 10 for locomotives and cars. Joseph Duren, president, Cazenovia, Wis.

The St. Louis & San Francisco is reported to have ordered 500 stock cars and 250 tank cars from the American Car & Foundry Company.

Engineers are said to be locating a line for the Denver Northwestern & Pacific through Provo canyon. Two other canyons have been mentioned as the possible route into Salt Lake City, Utah.

The first passenger train to make the trip through the new Michigan Central tunnel under the Detroit river ran through on July 27. It is expected that work on the tunnel will be completed by October 1.

A press despatch says that railways in nearly every section of the country have decided to discontinue after October 1 the practice of giving stop-over privileges on limited tickets whenever such stop-over extends the original limits of the tickets.

The New York Public Service Commission, Second district, has given permission to the railways to suspend until November 1 increases in freight rates which it had been proposed to put into effect on various dates from August 1 to September 15.

The Sterling-Moline Traction Co. has been incorporated at Sterling, Ill., with $1,500,000 capital. The company proposes to begin work about the middle of August on an electric line from Princeton, Ill., north to Sterling, thence southwest to Moline about 80 miles.

An officer of the Cazenovia & Sauk City writes that this company, which is building a line from Lavelle, Wis., southwest to Cazenovia, which will eventually be extended to Richland Center, has grading and bridging all done and contracts for track laying are to be let about August 10.

The Valley Park, St. Louis & Eastern has been incorporated in Illinois with $100,000 capital and office at East St. Louis, Ill. The plans call for a line from a point on the Mississippi river, opposite St. Louis, Mo., east across the state of Illinois to Gary, Ind. The incorporators include: W. C. Plass, O. B. Plass, St. Louis; C. Neustadt, J. H. Suess, East St. Louis, and H. Schrader, Belleville, Ill.

The Puebla & Pacific has been organized in New York, and with an office at Mexico City, to build under the concession granted last May to A. B. Adams, Inc., from Puebla, Puebla, Mexico, south to Laguna de Chacahua, on the Pacific coast. Lic. Francisco Alfaro is interested. The concession provides that the entire line must be finished within eight years. (See Mexican Roads, par. 27, p. 1324.)

The National Railways of Mexico is making improvements on the line from Acambaro, Guanajuato, southwest to Uruapan, 143 miles. A contract has been given to Bell, Sims & Blackford, Mexico City, for re-alinement work, and broadening the gage on about 38 miles. It is understood that the contract is worth $500,000. The company is carrying out with its own men similar work on the rest of the line.

Three new steamships are to be built immediately for the United Fruit Company for service between Boston and the tropics. The contract has been awarded to Workman, Clark & Co., of Belfast, Ireland. The material for the first ship is being assembled. The contract means the opening of a new service to the Isthmus and Colombia. The first ship will be ready for delivery on May 1, 1911. The second will be in commission a month later and the third on July 1. The steamers will be over 5,000 tons gross register, each with a length of 400 ft. and a 55-ft. breadth of beam. They will carry 150 saloon passengers and 65,000 bunches of bananas. It is planned to carry cargoes of a general nature from Boston to Jamaica, Colon and Santa Marta.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

The Durham & South Carolina is in the market for one 25-ton, direct gear locomotive.

The Illinois Central has ordered 15 Pacific type locomotives from the American Locomotive Company.

The Winston-Salem Southbound has ordered four 12-wheel locomotives from the Baldwin Locomotive Works.

The Baltimore & Ohio, as reported in the *Railway Age Gazette* of July 8, has ordered 50 simple Mikado locomotives from the Baldwin Locomotive Works, for delivery during December, 1910, and January, 1911.

General Dimensions.

Weight on drivers	About 215,000 lbs.
Total weight	About 270,000 "
Cylinders	24 in. x 32 in.
Diameter of drivers	64 in.
Type of boiler	Wagon top
Working steam pressure	205 lbs.
Heating surface, tubes	About 4,784 sq. ft.
" " firebox	" 230 "
" " total	" 5,014 "
Tubes, number	389
" outside diameter	2¼ in.
" length	21 ft.
Firebox, type	Wide
" length	120 in.
" width	84 "
" material	Open-hearth steel
Grate area	70 sq. ft.
Water capacity	9,500 gals.
Coal capacity	16 tons

Special Equipment.

Axles	Open-hearth steel
Bell ringer	Ochse
Boiler lagging	85 per cent. magnesia
Brakes	Westinghouse ET and Am. Equal. Driving Brake
Brake-beams	Diamond Special
Couplers	Tatum-Prendergast
Driving boxes	Cast-steel—Elvin lubricator
Headlight	Schroeder
Piston and valve-rod packings	U. S. Metallic
Safety valve	Two 4-in. Coale
Sanding devices	Hanlon
Tubes	Charcoal iron
Valve gear	Walschaert
Wheel centers	Cast steel

CAR BUILDING.

The National Railways of Mexico has ordered 20 passenger coaches from the American Car & Foundry Company.

MACHINERY AND TOOLS.

The Wabash has inquiries out for several plate machines and a number of miscellaneous tools.

IRON AND STEEL.

The Queen & Crescent has ordered 250 tons of steel for bridge work.

The Boston & Maine has placed a bridge order requiring 250 tons of steel.

The Pennsylvania Railroad has placed orders for six small bridge spans, requiring about 700 tons.

The Durham & South Carolina is in the market for 60 tons of 40-lb. relaying rail with fastenings.

The Denver & Rio Grande has ordered 800 tons of bridge steel from the American Bridge Company.

The Missouri Pacific has placed an order for shops at Salina, Kan., requiring 1,000 tons of fabricated steel.

The Baltimore & Ohio has ordered 200 tons of steel from the American Bridge Company for a subway at Chicago.

The Louisville & Nashville has divided a bridge order for 550 tons of steel between the Virginia Bridge Company and the Louisville Bridge & Iron Company.

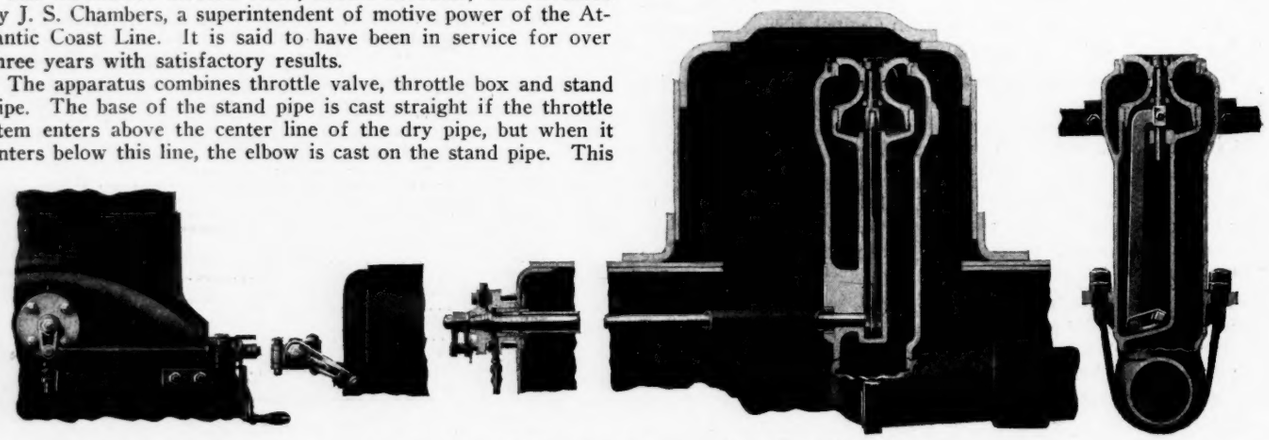
The Chicago & North Western has placed bridge contracts as follows: Pennsylvania Steel Company, 2,100 tons; American Bridge Company, 2,500 tons; Cambria Steel Company, a beam bridge, 300 tons, and another small span with the Jones & Laughlin Steel Company, 140 tons.

General Conditions in Steel.—It is reported that the July business in fabricated structural material will probably aggregate about 100,000 tons, as several contracts will be closed within the next few days, the largest one being for 10,000 tons for the southern section of the New York Central Terminal. Rails are quiet, although the Carnegie Steel Company has received an order for 75,000 tons for export trade. Heads of the subsidiary companies of the United States Steel Corporation, who met in New York a few days ago, report that orders on the books indicate fairly steady operation for the next three months and a heavy movement is looked for in the fall. The bulletin of the American Iron & Steel Association furnishes complete statistics for the production of pig iron for the first six months of the year, showing that it is the largest half year's output in the history of the industry. The output was 15,012,392 gross tons as against 14,773,125 tons for the last half of 1909 and 11,022,346 tons for the first half of 1909.

New Locomotive Throttle Valve.

The locomotive throttle valve, shown herewith, was invented by J. S. Chambers, a superintendent of motive power of the Atlantic Coast Line. It is said to have been in service for over three years with satisfactory results.

The apparatus combines throttle valve, throttle box and stand pipe. The base of the stand pipe is cast straight if the throttle stem enters above the center line of the dry pipe, but when it enters below this line, the elbow is cast on the stand pipe. This design of valve is also applicable to the use of a throttle stem which enters the dome above the boiler shell, in which case the stand pipe casting is slightly altered.



Application of Chambers' Locomotive Throttle Valve.

The throttle, or main, valve has a single balanced disk resting on the top of the stand pipe. It is unseated by the upward movement of the balancing piston which slides in a finished cylindrical seat and telescopes, at the top, over the reduced end of the valve. The shoulders of the valve stem and of the balancing piston are arranged to permit a slight movement of the latter before meeting. This preliminary movement unseats the small balancing valve at the top of the main valve and allows steam to enter the chamber under the balancing piston to balance the main valve.

The connecting rod extends downward within the balancing chamber and connects, through an internal crank, with the operating shaft, which is connected, through an external crank, to the transmission rod.

The operating handle, in normal position for closed throttle, extends away from the operator, and is latched to prevent accidental opening. A downward and backward movement opens, successively, the balancing valve and the throttle. The amount of throttle opening is indicated by the position of the handle and is limited by a stop which limits the travel. That part of the operating shaft within the boiler is surrounded by a casing which is threaded into a steam-tight bushing in the stand pipe wall, and on the other end into a sleeve which is packed into a stuffing box with metallic packing. With closed throttle, the operating shaft is entirely unaffected by the steam.

As the balancing valve opens and the pressure increases in the balancing chamber, the outward end thrust upon the end of the operating shaft is distributed upon a number of annular bearing shoulders on the operating shaft and working against a babbited bearing in the packing gland. This babbited packing also prevents the escape of any steam or condensation into the back end operating shaft casing while the throttle is open.

The stuffing box has a ground ball joint which conforms to the slope of the boiler head. Unintentional interior disconnections are impossible in a Chambers valve, since there are no loose pins in the operating mechanism. The only pins used are on the ends of the lifting rod, and these have countersunk heads and riveted ends. As the operating levers are within the stand pipe, and it is placed close to the side of the dome, an inspector may easily enter it to make repairs. No clearance, except that required for the lift, is needed on top of the throttle valve. It is, therefore, possible to place the valve high in the dome, so as to get as dry steam as possible. The steam passes through only one valve and there is little counter-current or obstruction to impede its flow.

The main valve, being single seated, does not require frequent regrinding, since unequal expansion of two ground joints is not to be considered. Pressure on the upper side of the valve tends to keep it seated, and the movement imparted by the flow of steam makes this valve, to a large extent, self-grinding. The main valve is readily accessible upon removal of the dome cap, and regrinding can usually be effected without removing the valve or seat. If, however, the combined balancing ring and seat is to be machined, it may be taken out of the stand pipe by the removal of three tap bolts.

Regulation of a Chambers valve is said to be so close that no special drifting valve is necessary for mountainous sections. The holding of an opening as small as $^1/_{64}$ in. is said to be practical, so that the engineman can admit a small amount of steam to properly lubricate the cylinders and balance the reciprocating parts while drifting. The regulation remains under control, without the necessity of continually opening and closing the throttle or locking the throttle handle in a fixed position.

The Chambers valve is manufactured by the Watson-Stillman Company, New York.

Buda Inspection Car.

B. S. Jenkins, general superintendent of telegraph on the Canadian Pacific, completed an inspection of the lines from Winnipeg to Vancouver on July 8. The trip was made in a Buda No. 16 motor car without trouble of any kind. The car carried Mr. Jenkins, his son and the driver, for the entire distance, and John Fletcher, superintendent of telegraph, and Frank E. Camp, head of the telephone department, from Field to the coast. The No. 16 car is built on the same lines as the No. 14 section car, the chief difference being in the seating arrangement and the addition of a canopy top. The No. 100 Buda inspection car, which is of the automobile type, is particularly adapted to long distance inspection trips on account of its easy riding features, convenient appointments and the speed attainable. This car has been run 14 miles in 13 minutes and the company claims that regular passenger train time can be maintained with it. The performance of such cars is rapidly dispelling the idea that gasolene cars are adapted only to short distances.